

PUBLIC

Data Integration and Data Flow Modeling with SAP Data Warehouse Cloud ANA365

Exercises
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Thank you for participating in this hands-on session about Data Integration and Data Flow Modeling with SAP Data Warehouse Cloud! The session is divided into three main parts:

1. Space creation and connection setup
2. Data loading and modeling
3. Data visualization

SYSTEMS

For working your way through the hands-on materials you need access to a SAP Data Warehouse Cloud tenant. Depending on whether you join the live session or watch the session on demand or replay the materials at a later point in time, different systems and credentials can be used.

Participating live

In case you are reading this manual while participating in the live session during the SAP TechEd 2020 program, you can use any of the following three tenants for participating in this hands-on session:

- EMEA region: <https://dwc-teched2020.us10.hcs.cloud.sap>
- APJ region: <https://dwc-teched2020.eu10.hcs.cloud.sap>
- NA region: <https://dwc-teched2020.ap10.hcs.cloud.sap>

To receive login credentials please send an e-mail to jascha.kanngiesser@sap.com mentioning the session ID and the tenant you would like to log in to.

On Demand

In case you are working on this hands-on materials after the live session you cannot use any of the three tenants listed above. Instead, you need to get yourself a SAP Data Warehouse Cloud trial tenant here:

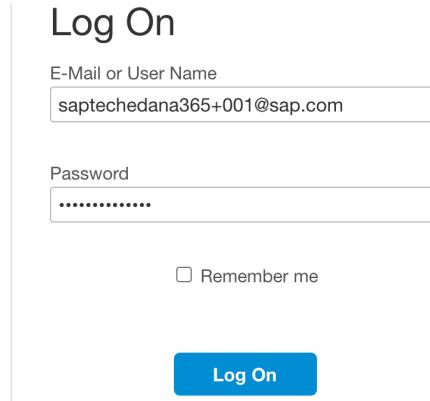
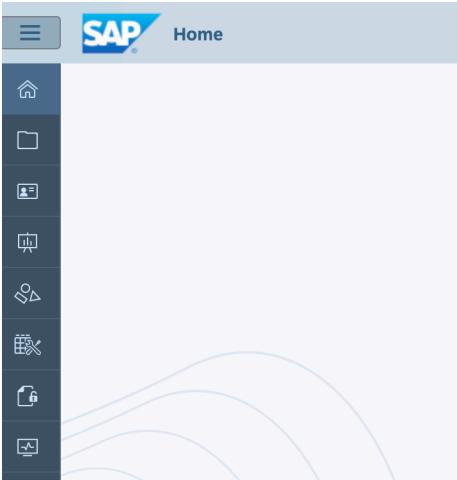
<https://saphanajourney.com/data-warehouse-cloud/trial/>

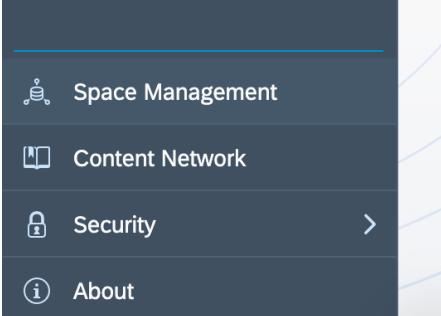
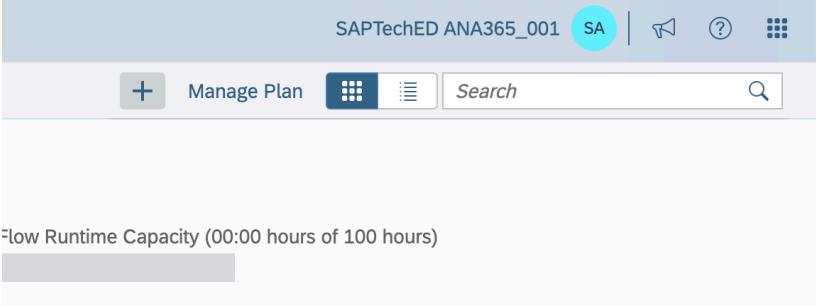
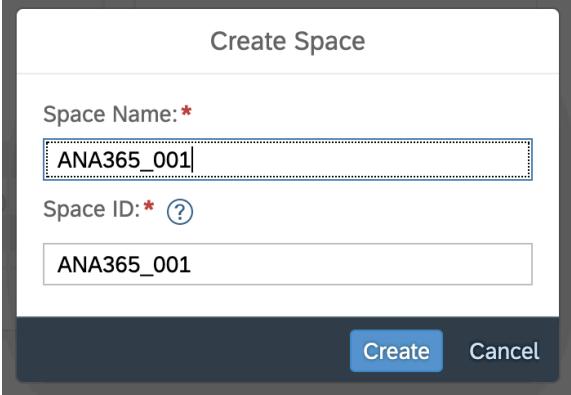
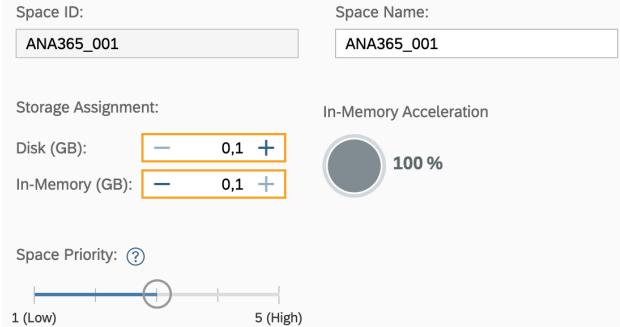
You need to set up all the required connectivity yourself, including the Data Provisioning Agent, uploading certificates, creating the data sets in the remote sources (or uploading the data sets to SAP Data Warehouse Cloud).

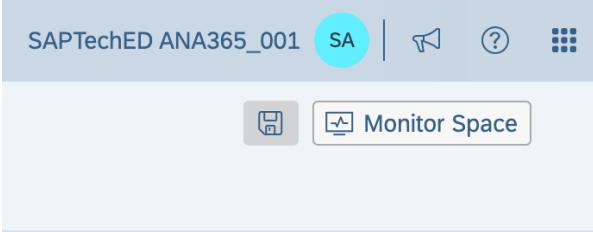
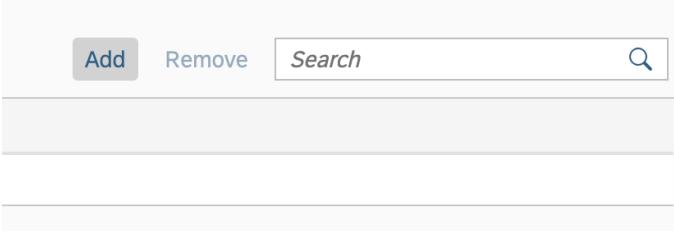
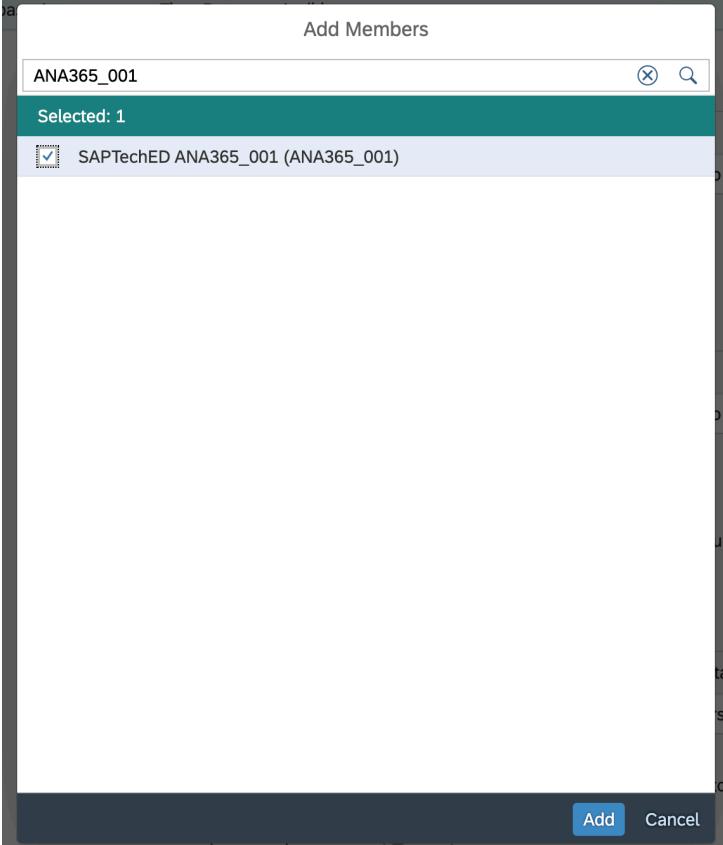
Please note that the exercise below is written for attending the live session. Therefore, for example the user credentials and tenant information might not match in case you are following the materials later on demand. In this case please substitute any live session-specific information with the individual information available to you in your trial tenant.

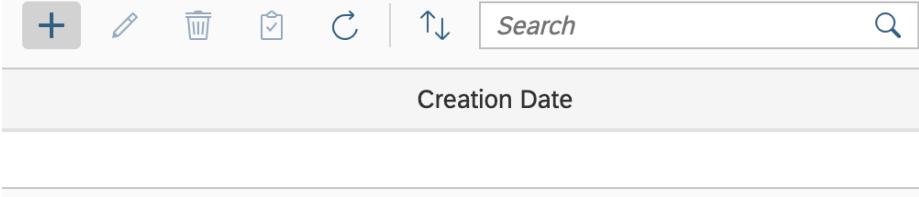
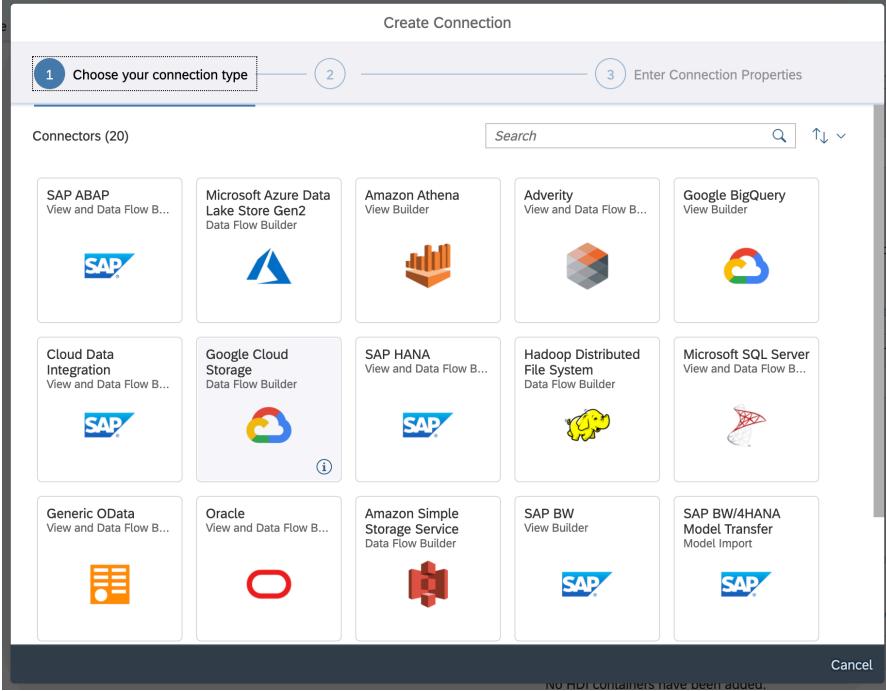
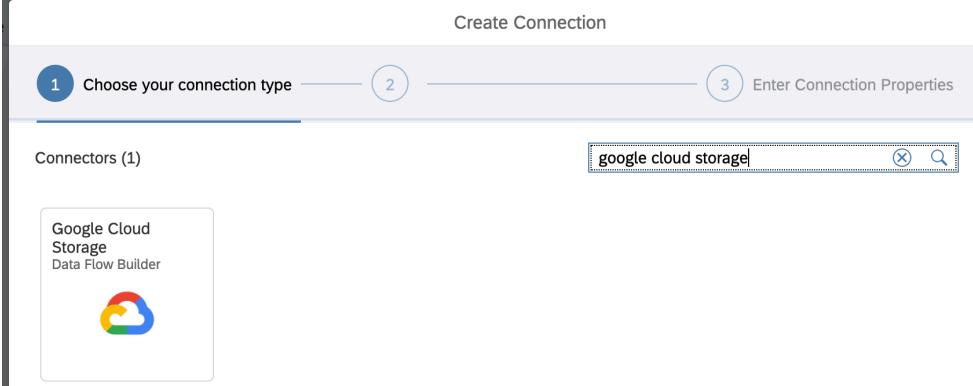
THINGS YOU WILL LEARN IN THIS SESSION

- How to create federated and replicated connections to SAP & non-SAP, cloud and on-premises data sources.
- How to load data into SAP Data Warehouse Cloud using external SQL clients.
- How to upload CSV files.
- How to model ETL processes to extract data from external sources into SAP Data Warehouse Cloud.
- How to consume & visualize data models using the SAP Analytics Cloud story builder and external SQL clients.

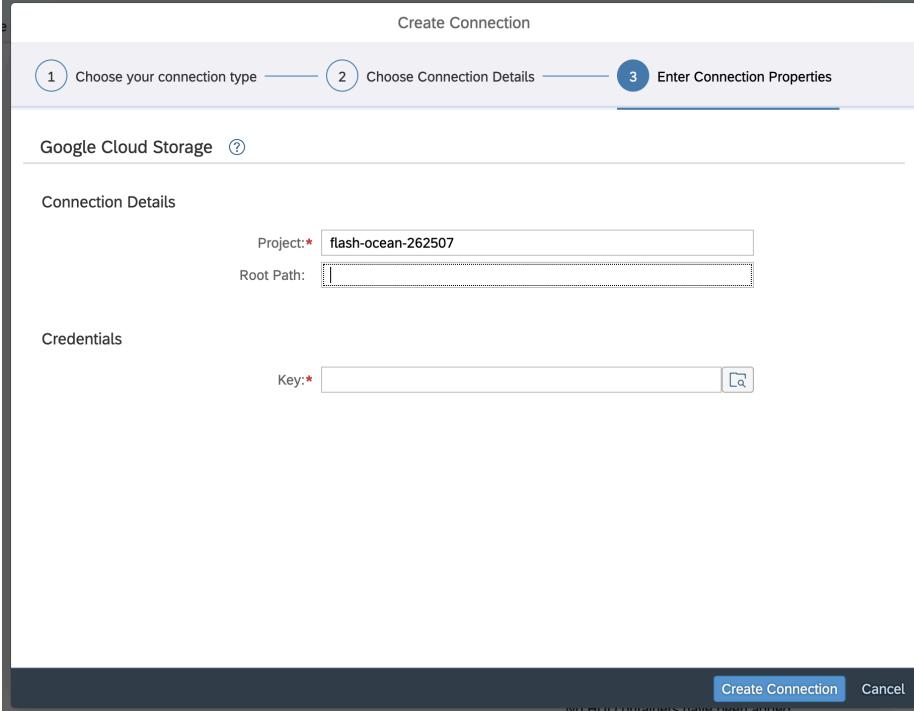
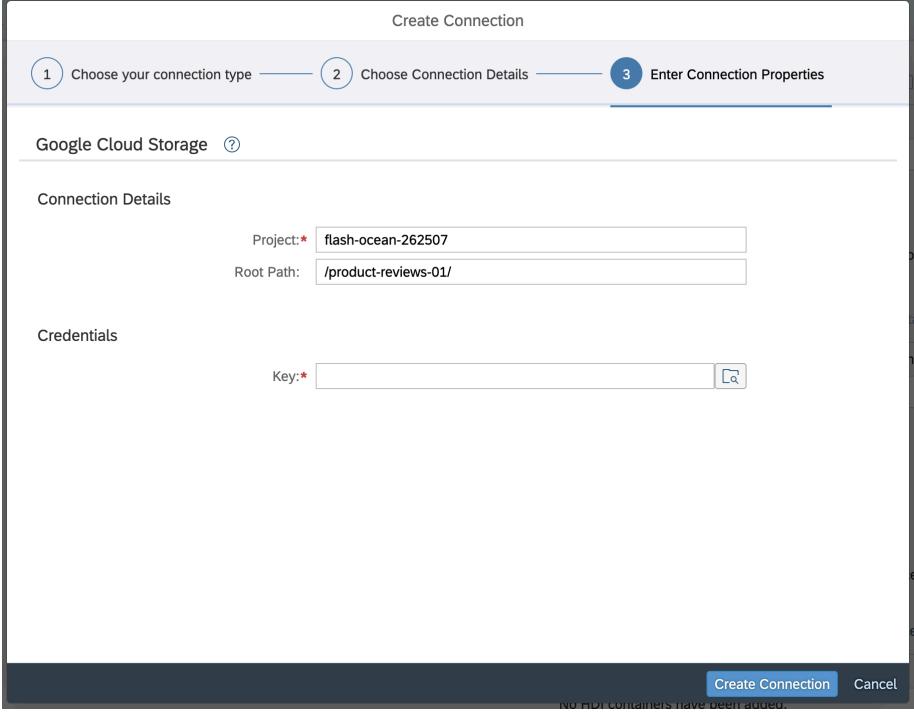
| Explanation | Screenshot |
|--|--|
| <p>1. Make sure you have the login credentials available to you. You should have received a username like saptechdedana365+xyz@sapcom and a password. Replace the value xyz with the number assigned to you.</p> |  <p>Log On</p> <p>E-Mail or User Name saptechdedana365+001@sap.com</p> <p>Password</p> <p><input type="checkbox"/> Remember me</p> <p>Log On</p> <p>Forgot password?</p> |
| <p>2. Let's get going – first part!</p> | <p>As mentioned above, this session consists of three main areas: Creating your space and required connections, load the data and build your data models and visualizing the results. Let's get started with creating your space and setting up the required connectivity.</p> |
| <p>3. Click on the menu bar to expand the navigation menu.</p> |  <p>SAP HANA Cloud Services</p> <p>Home</p> <ul style="list-style-type: none"> Home Data Projects Connections Models Visualizations |

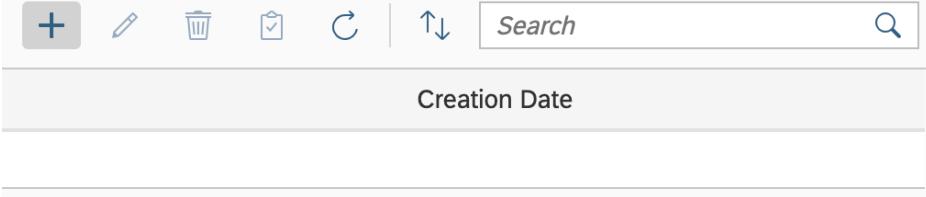
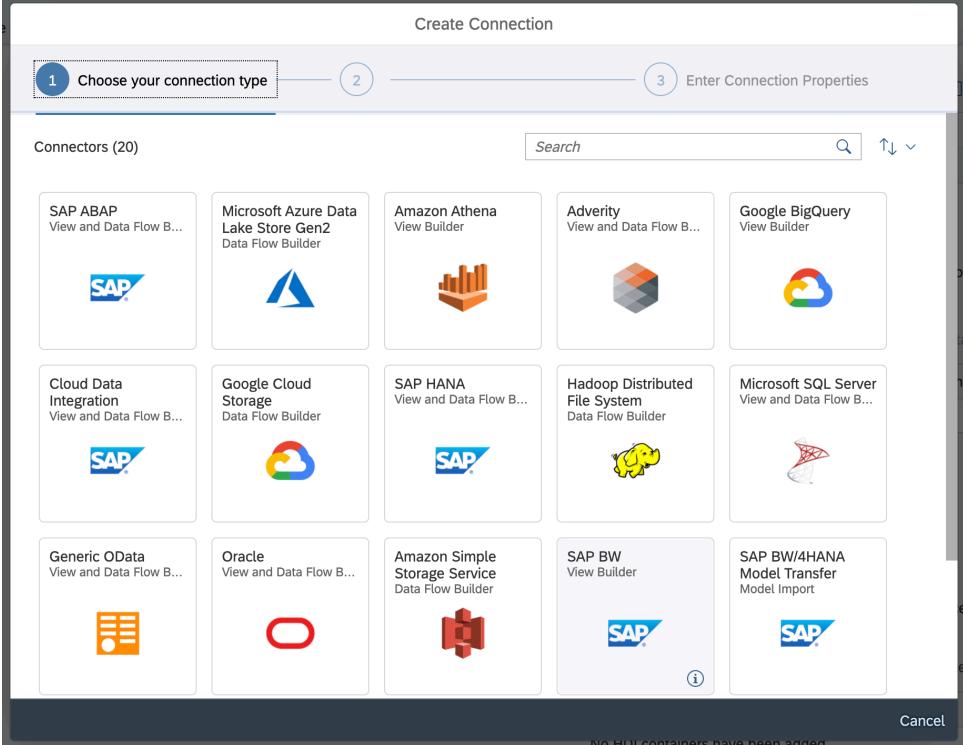
| Explanation | Screenshot |
|---|--|
| 4. Select Space Management in the bottom left corner. |  |
| 5. Hit the Create Space + - button in the top right corner to create a new space. |  |
| 6. Enter a Space Name and Space ID. Make sure that at least the Space ID follows the syntax ANA365_<your three-digit number>. Then hit Create to create your space. |  |
| 7. Reduce the space size in the Overview section at the top. Make sure to specify both the Disk (GB) and In-Memory (GB) storage assignment as 0,1 (GB). |  |

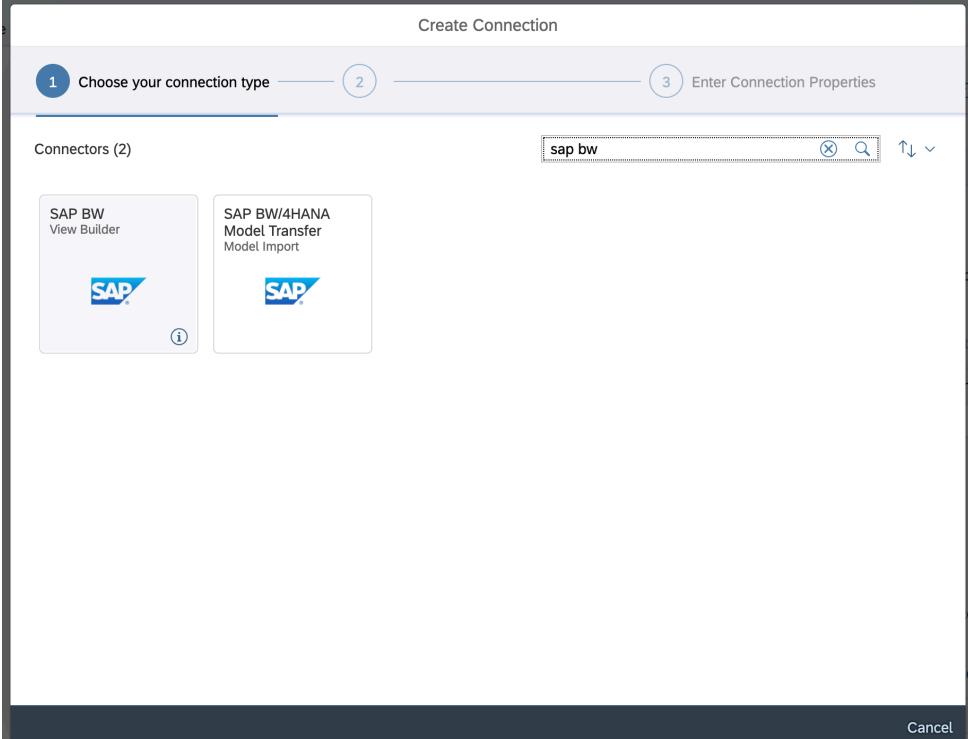
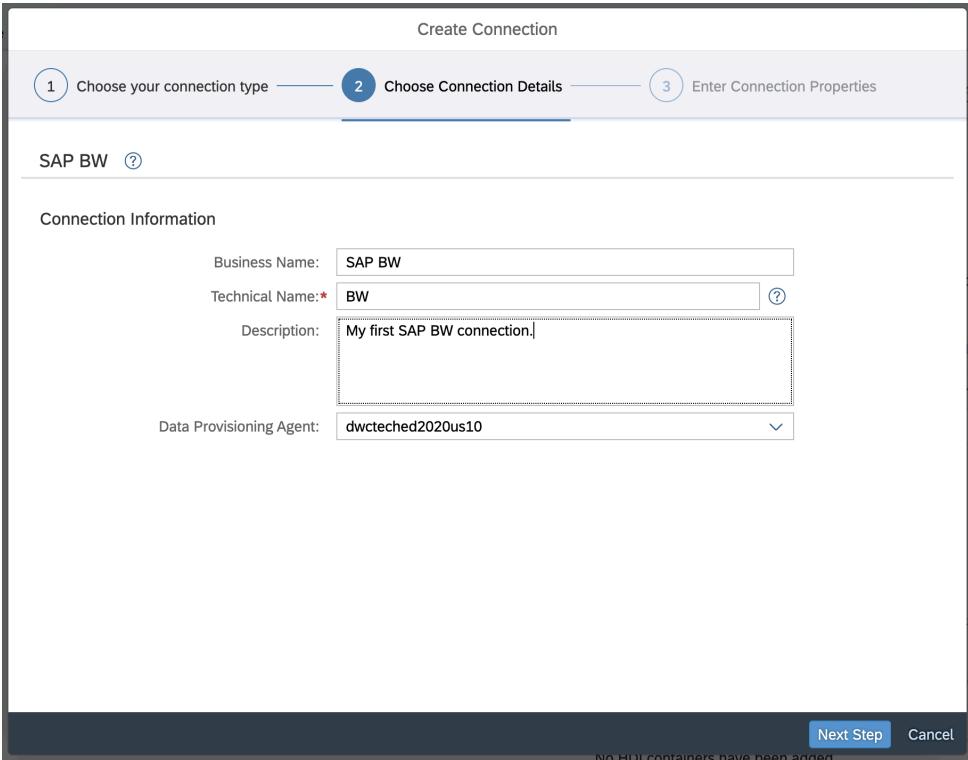
| Explanation | Screenshot |
|---|---|
| <p>8. Hit Save in the top right corner to save your changes.</p> |  |
| <p>9. Head on to the Users section and hit the Add button on the right to add yourself to your space.</p> |  |
| <p>10. Search for your user ANA365_<your three digit number> in the dialog, select your user and hit Add to close the dialog.</p> |  |

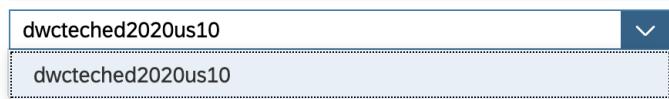
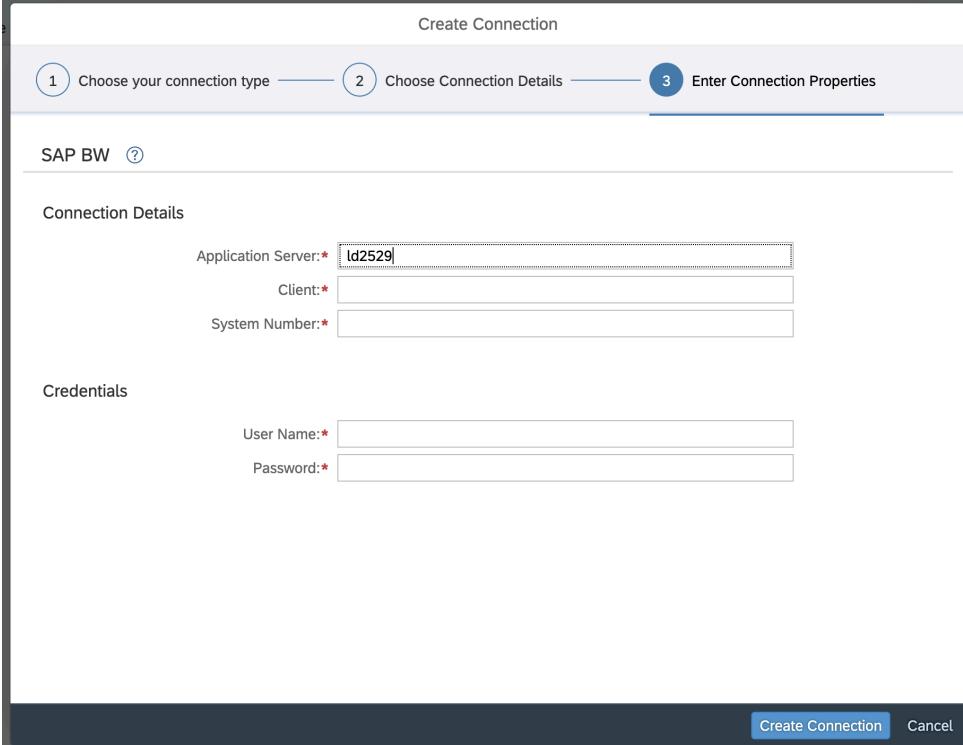
| Explanation | Screenshot |
|---|--|
| <p>11. Head on to the Connections (Local Connections) section and hit the + - button to create a new connection.</p> |  |
| <p>12. Select the Google Cloud Storage tile.</p> |  |
| <p>13. Or use the filter and search for Google Cloud storage in case you cannot find it in the list of connections.</p> |  |

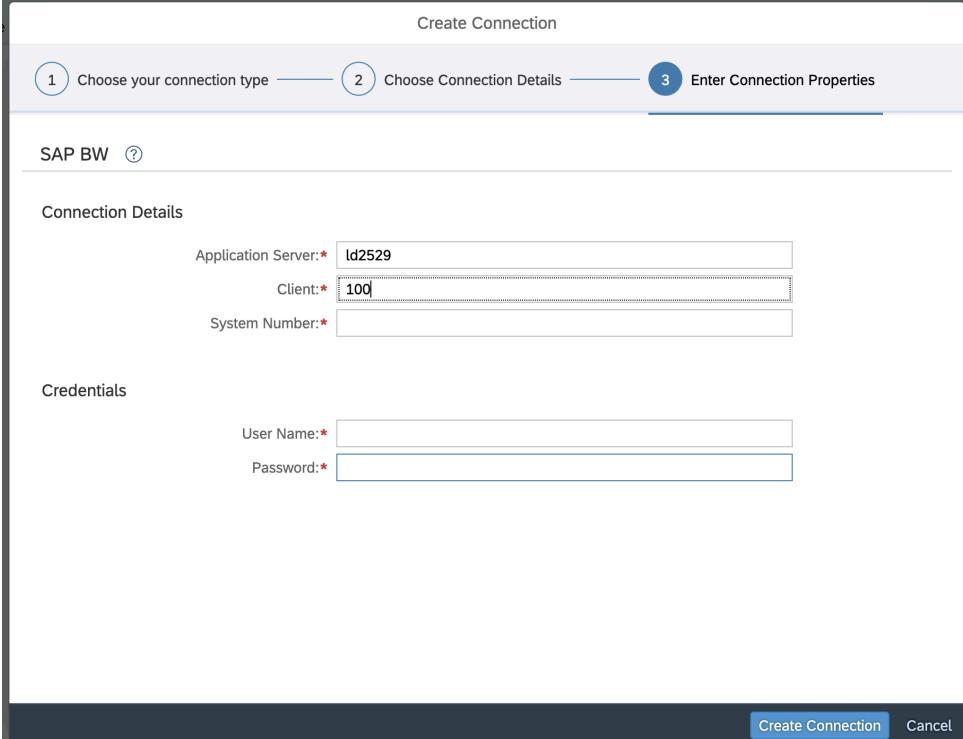
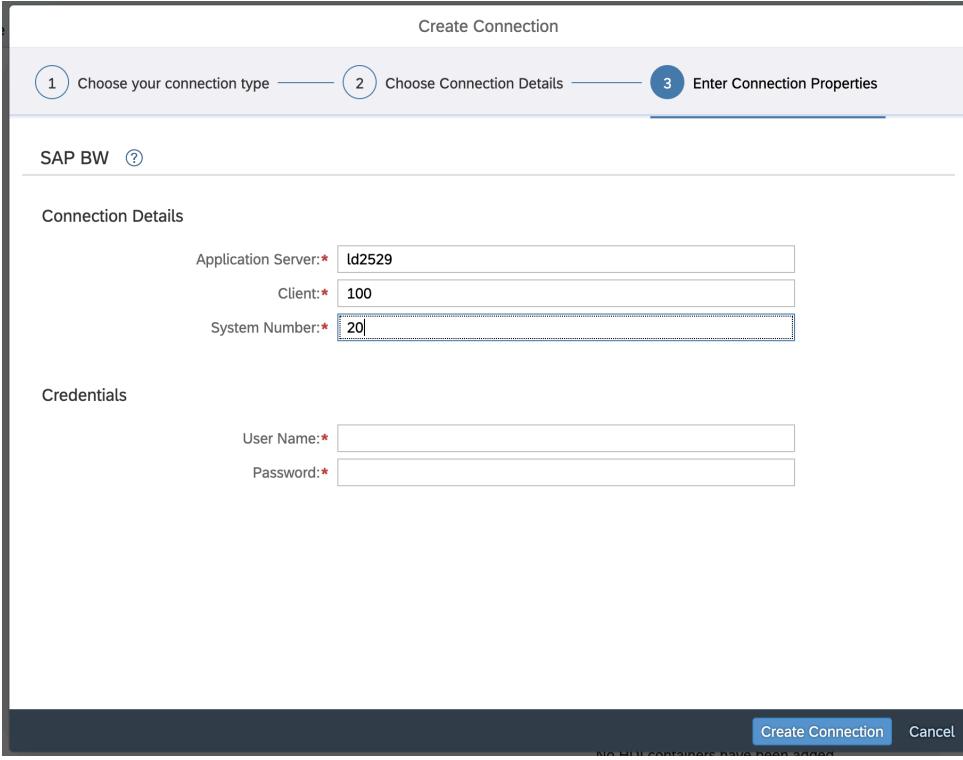
| Explanation | Screenshot |
|---|--|
| <p>14. Enter a meaningful business name and technical name as well as a useful description.</p> | <p>The screenshot shows the 'Create Connection' interface for Google Cloud Storage. Step 2, 'Choose Connection Details', is active. The 'Business Name' field contains 'Google Cloud Storage'. The 'Technical Name' field is marked with a red asterisk and contains 'GCS'. The 'Description' field contains 'My first Google Cloud Storage connection.' A progress bar at the top indicates three steps: 'Choose your connection type', 'Choose Connection Details', and 'Enter Connection Properties', with 'Choose Connection Details' highlighted.</p> |
| <p>15. Hit Next Step to navigate to the next screen.</p> | <p>The screenshot shows the 'Create Connection' interface for Google Cloud Storage. Step 3, 'Enter Connection Properties', is active. Under 'Connection Details', the 'Project' field is marked with a red asterisk and contains a placeholder. The 'Root Path' field is empty. Under 'Credentials', the 'Key' field is marked with a red asterisk and contains a placeholder. A progress bar at the top indicates three steps: 'Choose your connection type', 'Choose Connection Details', and 'Enter Connection Properties', with 'Enter Connection Properties' highlighted.</p> |

| Explanation | Screenshot |
|--|---|
| <p>16. Enter the Project as flash-ocean-262507</p> |  <p>The screenshot shows the 'Create Connection' dialog for Google Cloud Storage. It is divided into three main sections: 'Choose your connection type' (step 1), 'Choose Connection Details' (step 2), and 'Enter Connection Properties' (step 3). Step 3 is currently active. The 'Connection Details' section contains fields for 'Project:' (set to 'flash-ocean-262507') and 'Root Path:' (empty). The 'Credentials' section contains a 'Key:' field (empty). At the bottom right are 'Create Connection' and 'Cancel' buttons.</p> |
| <p>17. Enter the root path as /product-reviews-01/</p> |  <p>The screenshot shows the 'Create Connection' dialog for Google Cloud Storage, identical to the previous one but with a different root path. The 'Root Path:' field now contains '/product-reviews-01/'. All other fields and buttons are the same as in the previous screenshot.</p> |

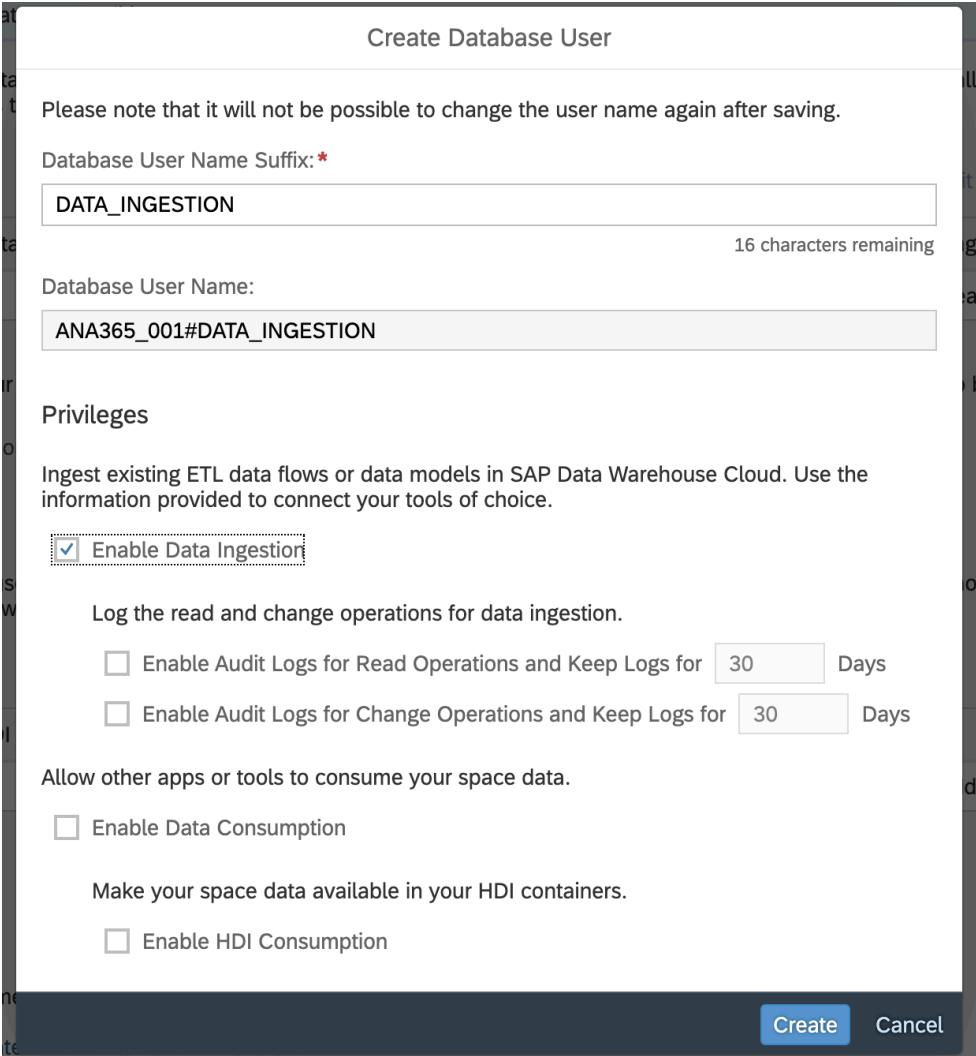
| Explanation | Screenshot |
|--|---|
| 23. Hit the + button again to create another connection. |  |
| 24. This time select the SAP BW connection. |  |

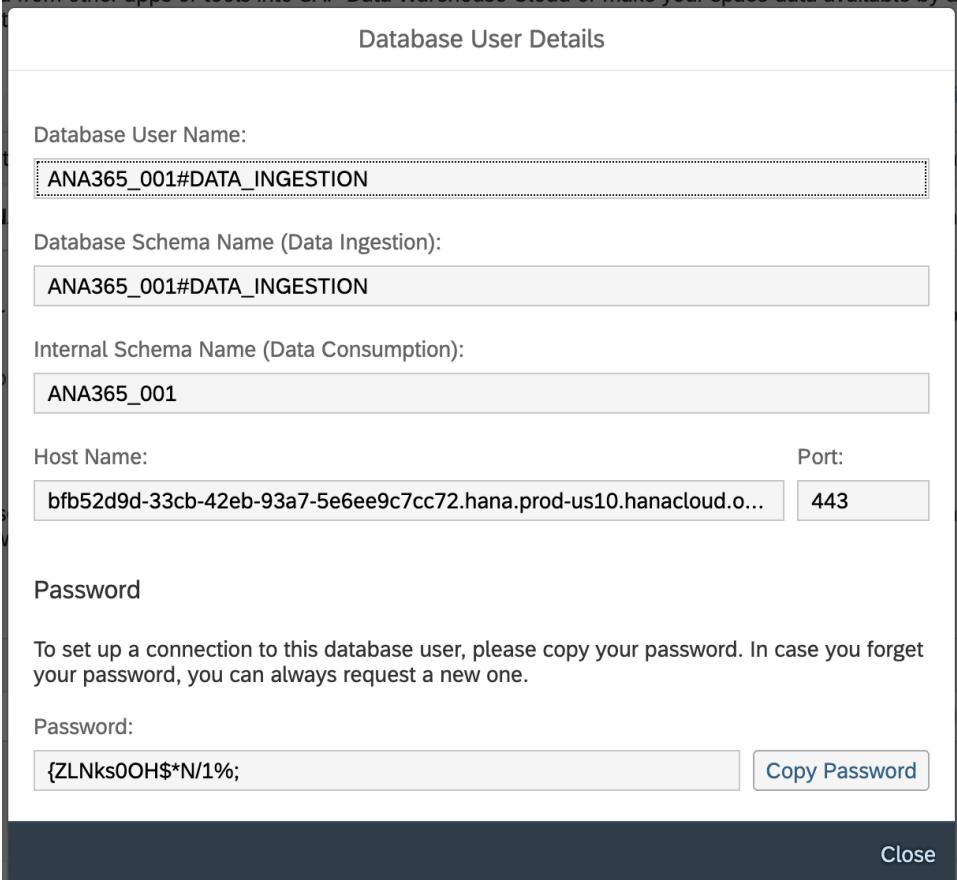
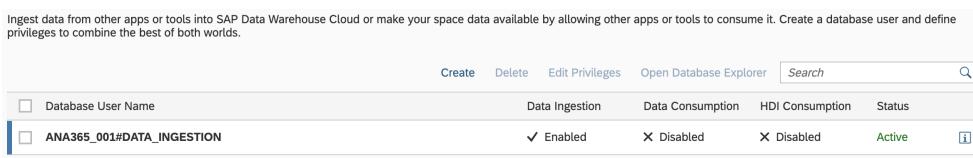
| Explanation | Screenshot |
|--|--|
| <p>25. In case you cannot find it, search for SAP BW in the filter bar.</p> |  |
| <p>26. Enter a meaningful business name and technical name as well as a descriptive description.</p> |  |

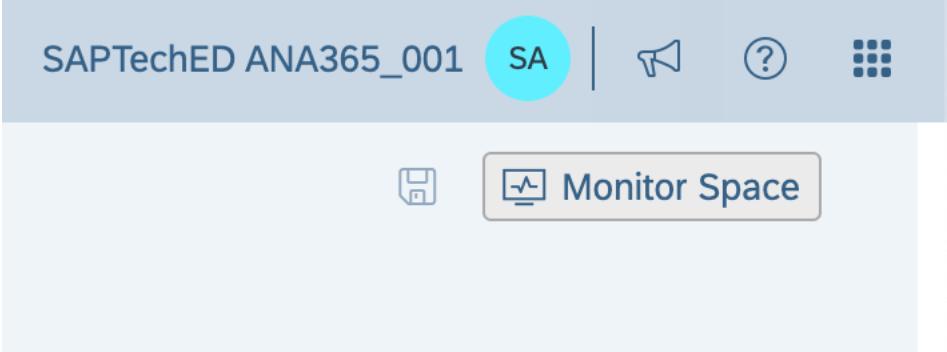
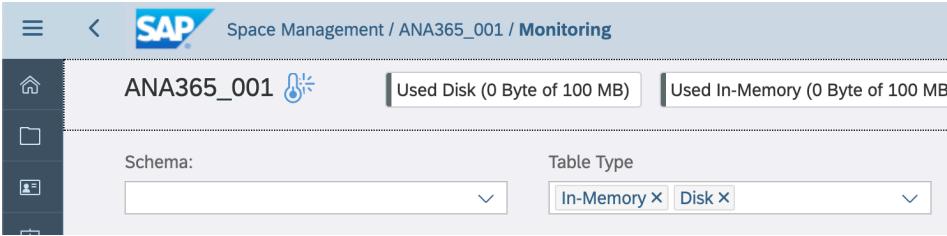
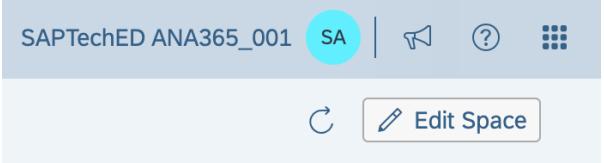
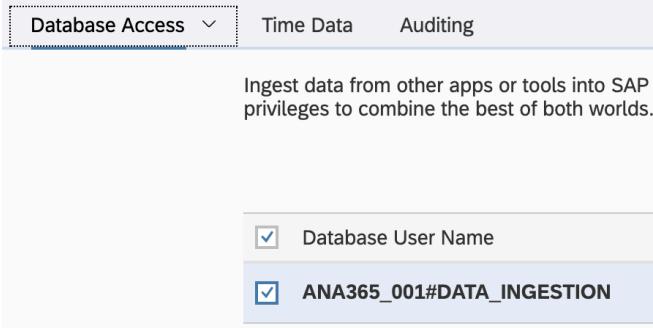
| Explanation | Screenshot |
|--|--|
| 27. Make sure that the right Data Provisioning Agent is selected. The ending (in this case us10) should match the tenant you are logged in to. | <p>Data Provisioning Agent:</p>  |
| 28. Hit Next Step. | |
| 29. Fill out the Connection Details. Use Id2529 as the Application Server. |  |

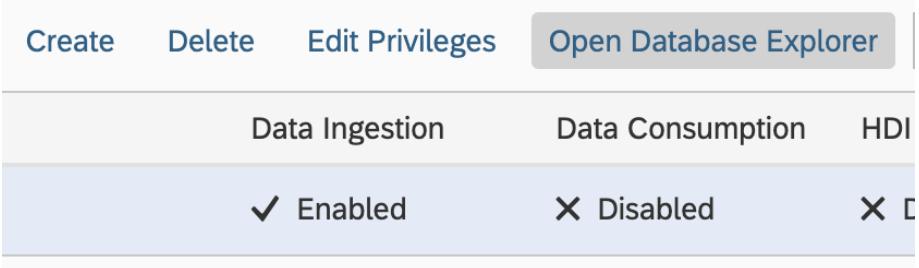
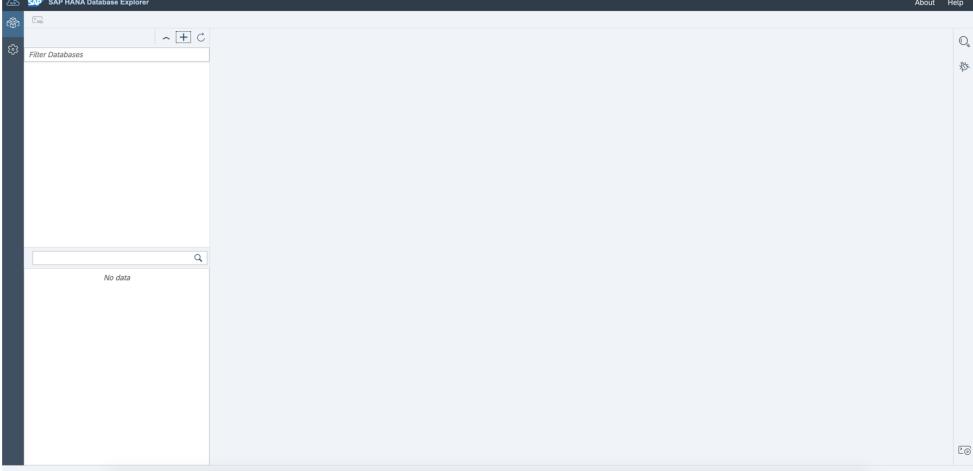
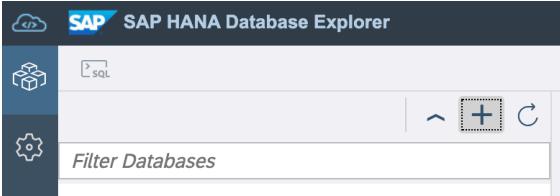
| Explanation | Screenshot |
|-----------------------------|--|
| 30. Enter Client 100. |  <p>Create Connection</p> <p>1 Choose your connection type — 2 Choose Connection Details — 3 Enter Connection Properties</p> <p>SAP BW ?</p> <p>Connection Details</p> <p>Application Server:* <input type="text" value="ld2529"/></p> <p>Client:* <input type="text" value="100"/></p> <p>System Number:* <input type="text"/></p> <p>Credentials</p> <p>User Name:* <input type="text"/></p> <p>Password:* <input type="password"/></p> <p>Create Connection Cancel</p> <p>No HU containers have been added</p> |
| 31. Enter System Number 20. |  <p>Create Connection</p> <p>1 Choose your connection type — 2 Choose Connection Details — 3 Enter Connection Properties</p> <p>SAP BW ?</p> <p>Connection Details</p> <p>Application Server:* <input type="text" value="ld2529"/></p> <p>Client:* <input type="text" value="100"/></p> <p>System Number:* <input type="text" value="20"/></p> <p>Credentials</p> <p>User Name:* <input type="text"/></p> <p>Password:* <input type="password"/></p> <p>Create Connection Cancel</p> <p>No HU containers have been added</p> |

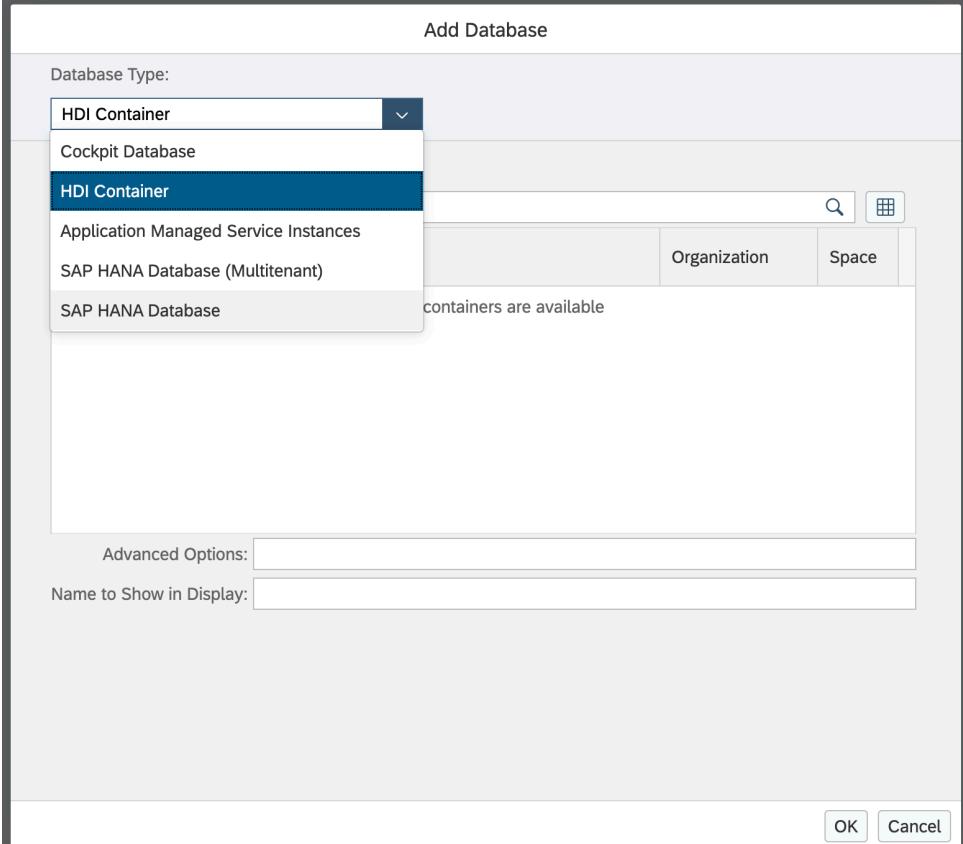
| Explanation | Screenshot |
|--|--|
| 32. Enter user CLOUDCON with password Teched2020 | <p>The screenshot shows the 'Create Connection' dialog for SAP BW. The steps are numbered 1, 2, and 3. Step 3 is currently active, titled 'Enter Connection Properties'. It contains fields for 'Connection Details' (Application Server: ld2529, Client: 100, System Number: 20) and 'Credentials' (User Name: CLOUDCON, Password: masked). At the bottom right are 'Create Connection' and 'Cancel' buttons.</p> |
| 33. Hit Create Connection to finish the dialog. | |
| 34. Select the newly created SAP BW connection and again hit the Validate Connection button on the right. | <p>The screenshot shows a list of connections. The 'SAP BW' connection is selected, indicated by a checked checkbox. Other connections listed are 'Name: Google Cloud Storage' and 'Type: Google Cloud Storage'.</p> |
| 35. Make sure that the toast message on the bottom of the screen mentions that the connection can be used in the view builder. | <p>A toast message at the bottom of the screen states: 'Connection "SAP BW" is valid. - Data flow building is not supported. - Remote tables and view building enabled.'</p> |

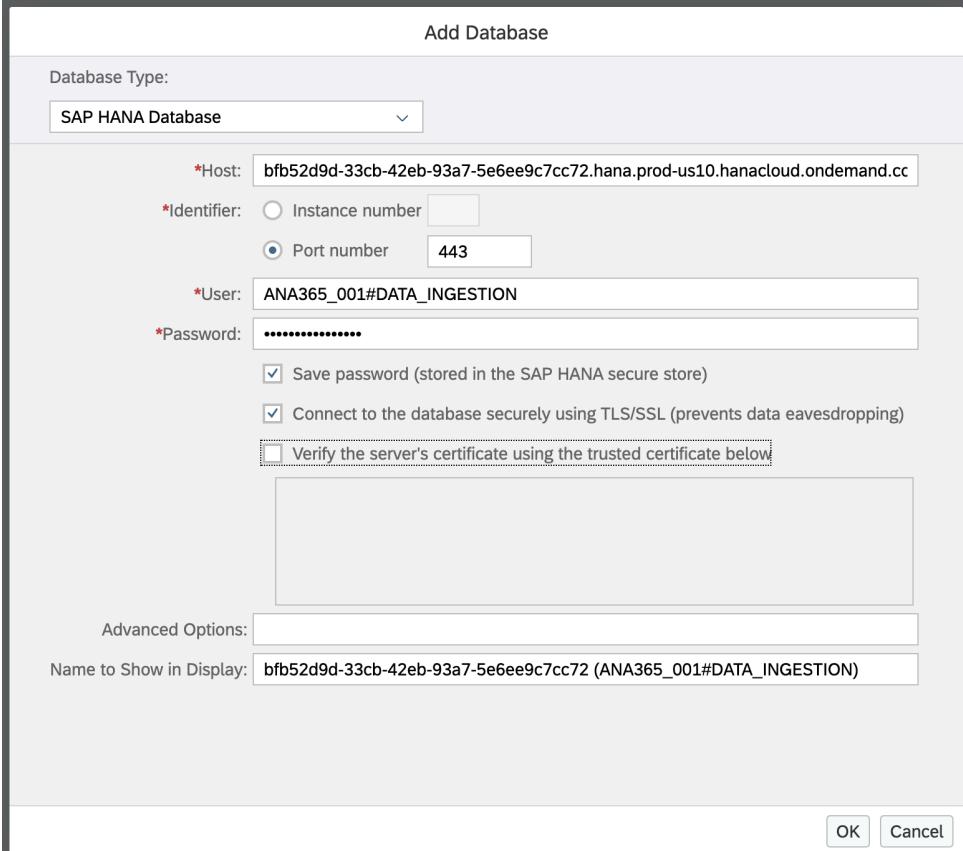
| Explanation | Screenshot |
|---|---|
| 36. Head on to the Database Access (Database Users) section. Hit the Create button to create a new database user. |  <p>The screenshot shows the 'Database Access' section of the SAP Data Warehouse Cloud interface. At the top, there are tabs for 'Database Access', 'Time Data', and 'Auditing'. Below the tabs, a message reads: 'Ingest data from other apps or tools into SAP Data Warehouse Cloud or make your space data available by allowing other apps or tools privileges to combine the best of both worlds.' A 'Create' button is visible at the top right of the main content area.</p> |
| 37. Enter a meaningful Database User Name suffix and make sure to select the Enable Data Ingestion checkbox in the Privileges section. Then hit Create to close the dialog. |  <p>The screenshot shows the 'Create Database User' dialog box. It includes fields for 'Database User Name Suffix' (set to 'DATA_INGESTION') and 'Database User Name' (set to 'ANA365_001#DATA_INGESTION'). Under the 'Privileges' section, the 'Enable Data Ingestion' checkbox is checked. Other options like 'Enable Audit Logs' and 'Enable Data Consumption' are also present. At the bottom, there are 'Create' and 'Cancel' buttons.</p> |

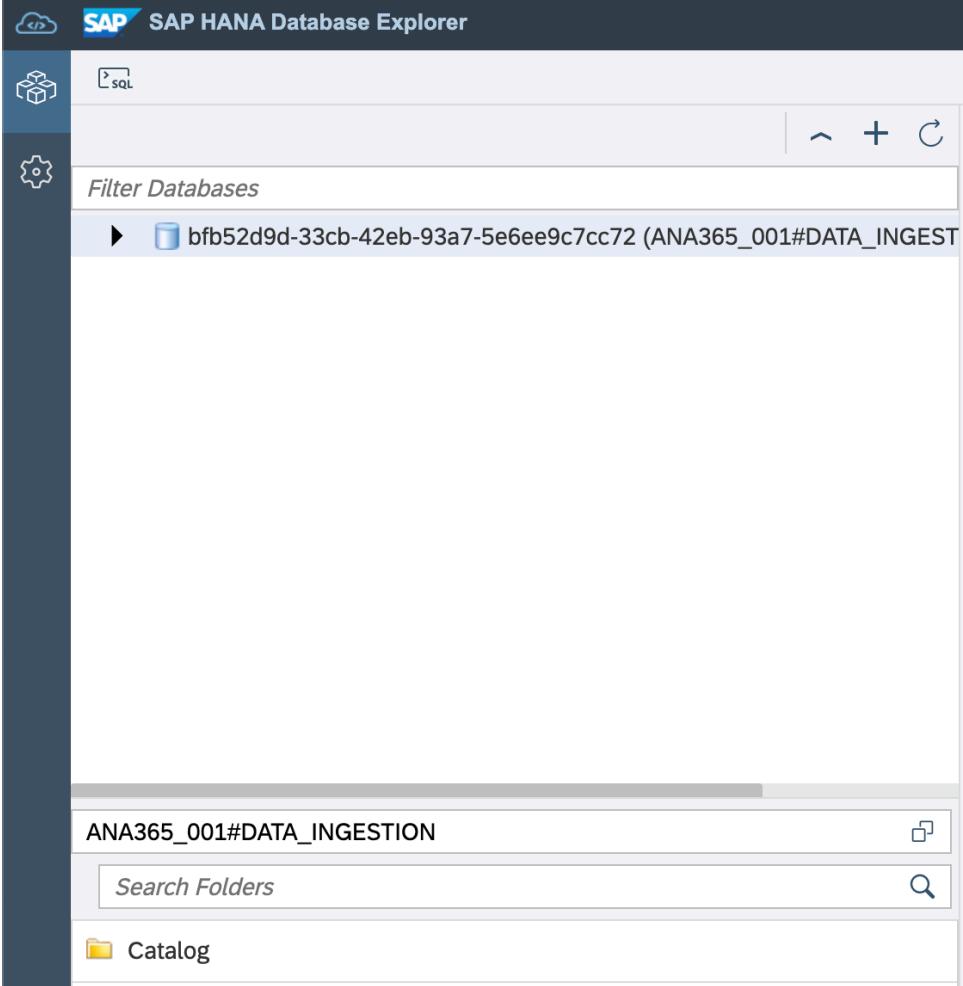
| Explanation | Screenshot | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--------|-----------------|------------------------|------------------|------------------------|--------|---|--|--|--|----------------|------------------|-----------------|--------|---|--|--|--|-----------|------------|------------|--------|
| 38. Make sure to copy the Host Name, Port, Database User Name and Password to a safe place, for example your local notes on Mac or Notepad on Windows. Then hit Close to finish the user creation. |  <p>Database User Details</p> <p>Database User Name: ANA365_001#DATA_INGESTION</p> <p>Database Schema Name (Data Ingestion): ANA365_001#DATA_INGESTION</p> <p>Internal Schema Name (Data Consumption): ANA365_001</p> <p>Host Name: bfb52d9d-33cb-42eb-93a7-5e6ee9c7cc72.hana.prod-us10.hanacloud.o... Port: 443</p> <p>Password To set up a connection to this database user, please copy your password. In case you forget your password, you can always request a new one.</p> <p>Password: {ZLNks0OH\$*N/1%; Copy Password</p> <p style="text-align: right;">Close</p> | | | | | | | | | | | | | | | | | | | | | | |
| 39. The created database user should be shown with status Active . |  <p>Ingest data from other apps or tools into SAP Data Warehouse Cloud or make your space data available by allowing other apps or tools to consume it. Create a database user and define privileges to combine the best of both worlds.</p> <table border="1"> <thead> <tr> <th></th> <th>Create</th> <th>Delete</th> <th>Edit Privileges</th> <th>Open Database Explorer</th> <th>Search</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Database User Name</td> <td></td> <td></td> <td></td> <td>Data Ingestion</td> <td>Data Consumption</td> <td>HDI Consumption</td> <td>Status</td> </tr> <tr> <td><input checked="" type="checkbox"/> ANA365_001#DATA_INGESTION</td> <td></td> <td></td> <td></td> <td>✓ Enabled</td> <td>✗ Disabled</td> <td>✗ Disabled</td> <td>Active</td> </tr> </tbody> </table> | | Create | Delete | Edit Privileges | Open Database Explorer | Search | <input type="checkbox"/> Database User Name | | | | Data Ingestion | Data Consumption | HDI Consumption | Status | <input checked="" type="checkbox"/> ANA365_001#DATA_INGESTION | | | | ✓ Enabled | ✗ Disabled | ✗ Disabled | Active |
| | Create | Delete | Edit Privileges | Open Database Explorer | Search | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> Database User Name | | | | Data Ingestion | Data Consumption | HDI Consumption | Status | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> ANA365_001#DATA_INGESTION | | | | ✓ Enabled | ✗ Disabled | ✗ Disabled | Active | | | | | | | | | | | | | | | | |
| 40. Congratulations! | You successfully created your space and created connections to a non-SAP source, Google Big Query! Also you integrated a SAP BW system and enabled your space to get connected to external SQL clients! Before we continue with the second parts, let's quickly make sure that the space is still empty. | | | | | | | | | | | | | | | | | | | | | | |

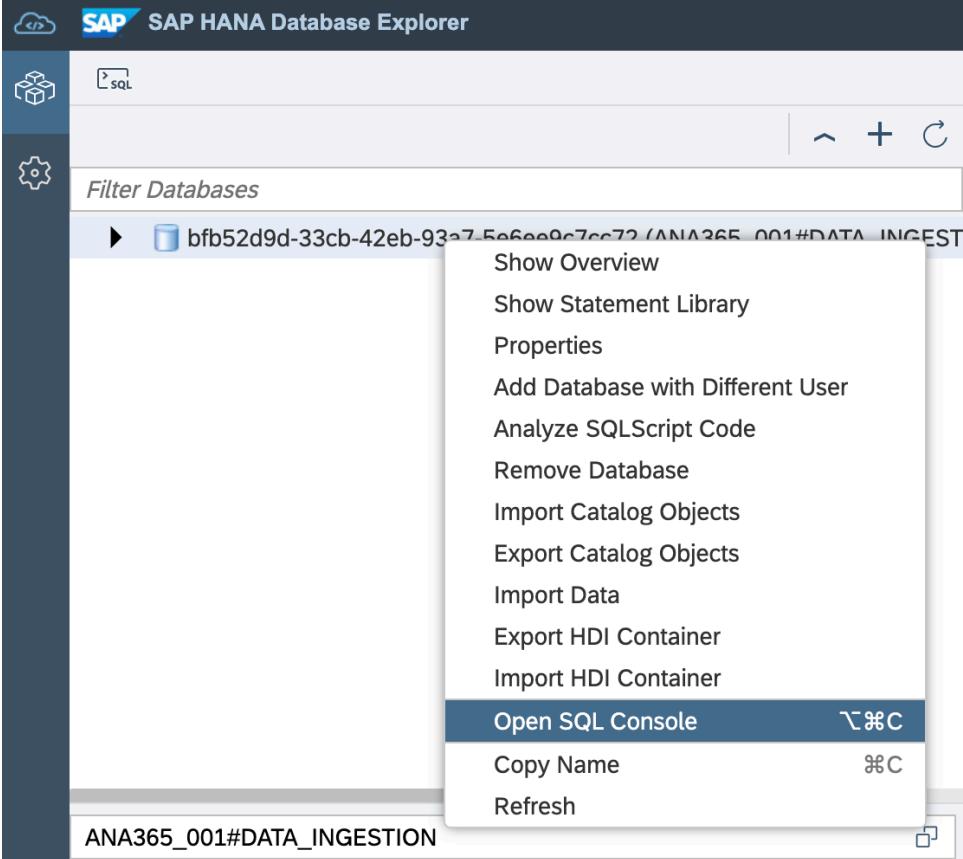
| Explanation | Screenshot |
|--|--|
| 41. Before we start loading data into our space, hit the Monitor Space button in the top right corner. |  |
| 42. Make sure that the space does not yet contain any data. |  |
| 43. Hit Edit Space in the top right corner to navigate back to the Management of your Space. |  |
| 44. Now it's time to prep your space with some data! | <p data-bbox="502 1199 1449 1396">As part of the second section of this hands-on we will equip your space with all the required data and setup the data models. We will ingest some data via an external SQL client (SAP HANA Database Explorer, but can be any client actually), replicate data from some of the data sets available in the SAP BW source, upload a flat file, use the Data Flow to ETL-like move data from Google Cloud Storage into your space and combine the locally available data from these different steps with some data we access virtually from the SAP BW system.</p> |
| 45. Navigate back to the Database Access section and select the Database User you created. |  |

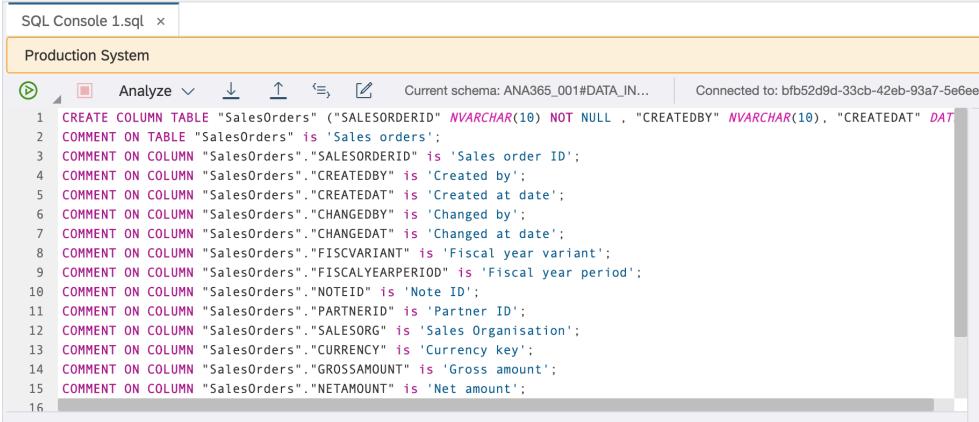
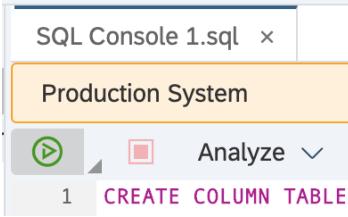
| Explanation | Screenshot |
|---|--|
| 46. Hit the Open Database Explorer button on the right. This takes you to the SAP HANA Database Explorer website. |  <p>The screenshot shows a menu bar with 'Create', 'Delete', 'Edit Privileges', and 'Open Database Explorer'. The 'Open Database Explorer' button is highlighted with a blue background and white text. Below the menu, there are three tabs: 'Data Ingestion' (Enabled), 'Data Consumption' (Disabled), and 'HDI' (Disabled).</p> |
| 47. Within the SAP HANA Database Explorer you can execute DML and DDL statements to create tables or views or insert table into tables. |  <p>The screenshot shows the SAP HANA Database Explorer interface. The title bar says 'SAP HANA Database Explorer'. The main area is labeled 'Filter Databases' and contains a message 'No data'. There are icons for cloud, cube, and gear in the top left.</p> |
| 48. Hit the + button in the top left corner. |  <p>The screenshot shows the SAP HANA Database Explorer interface with the '+' button highlighted in the top left corner of the toolbar.</p> |

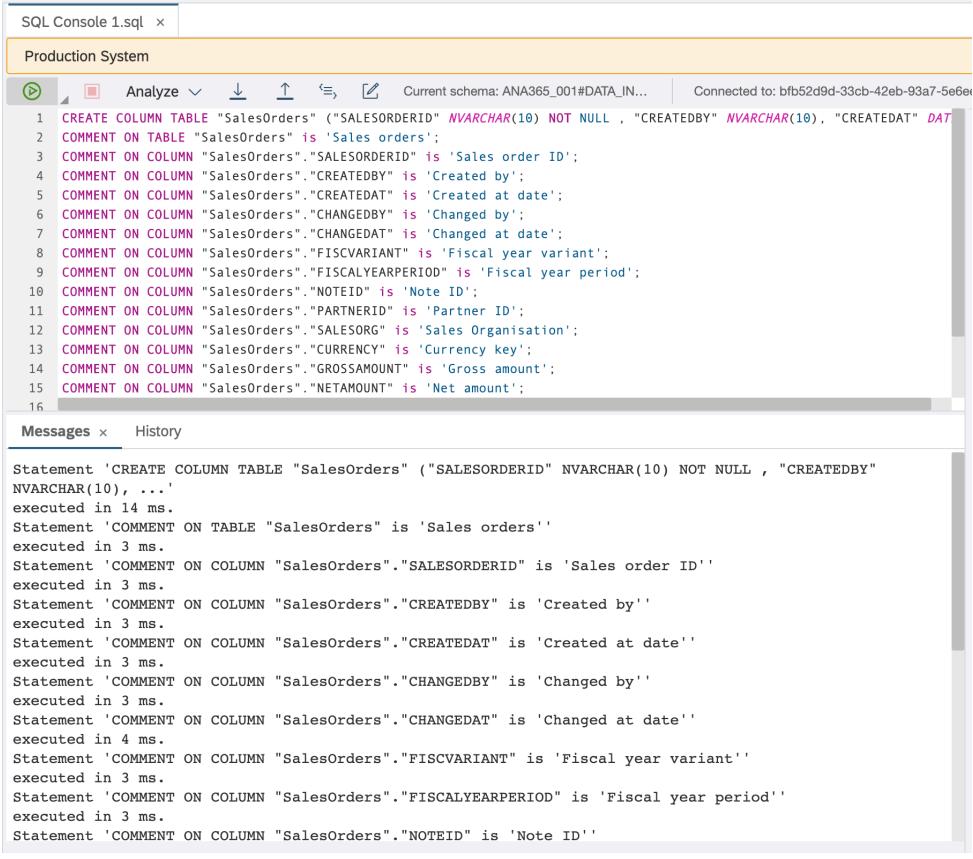
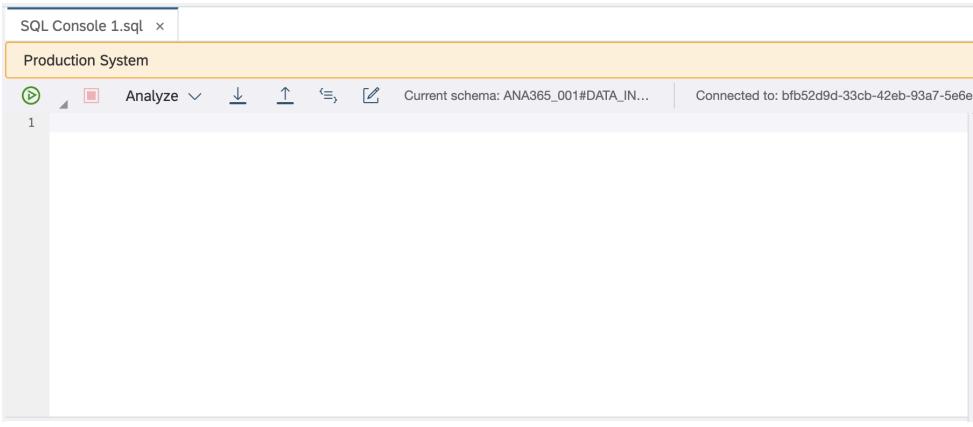
| Explanation | Screenshot |
|--|--|
| 49. From the Database Type select SAP HANA Database. |  <p>The screenshot shows the 'Add Database' dialog box. In the top-left corner, there is a dropdown menu labeled 'Database Type'. The 'HDI Container' option is currently selected and highlighted with a dark blue background. Other options visible in the dropdown include 'Cockpit Database', 'Application Managed Service Instances', 'SAP HANA Database (Multitenant)', and 'SAP HANA Database'. To the right of the dropdown, there is a search icon and a grid icon. Below the dropdown, a message says 'containers are available'. At the bottom of the dialog, there are two input fields: 'Advanced Options:' and 'Name to Show in Display:', both currently empty. On the far right, there are 'OK' and 'Cancel' buttons.</p> |

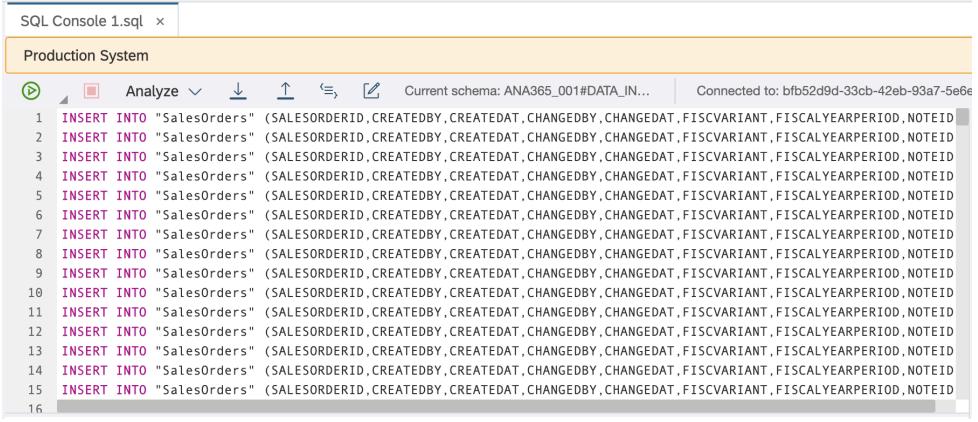
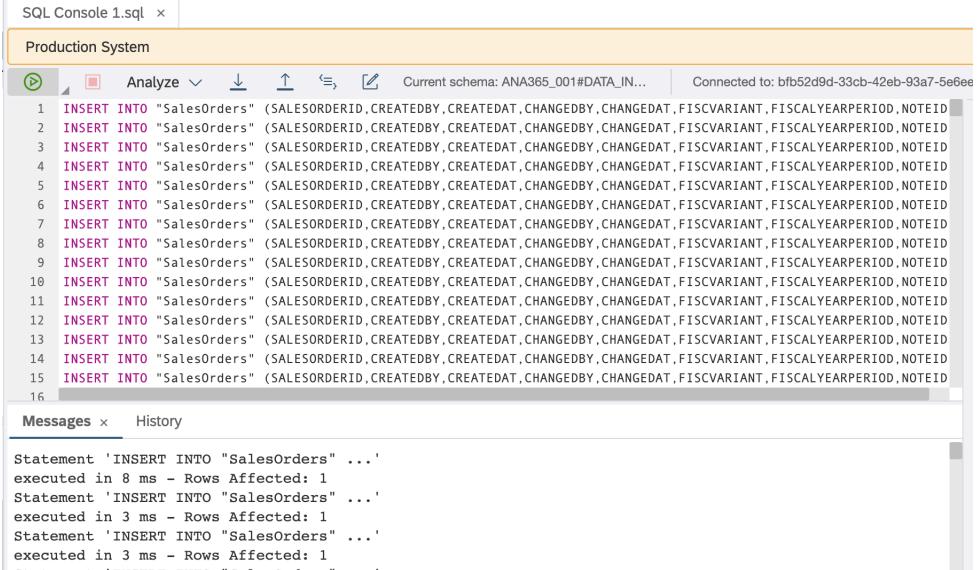
| Explanation | Screenshot |
|---|--|
| <p>50. Enter the information copied earlier to a safe place when creating the database user like the Host Name, Port, Database User and Password.</p> |  <p>The screenshot shows the 'Add Database' dialog for a SAP HANA Database. The 'Database Type' dropdown is set to 'SAP HANA Database'. The 'Host' field contains the value 'bf52d9d-33cb-42eb-93a7-5e6ee9c7cc72.hana.prod-us10.hanacloud.ondemand.cc'. The 'Identifier' section has 'Port number' selected and the value '443'. The 'User' field is 'ANA365_001#DATA_INGESTION' and the 'Password' field is redacted. There are three checked checkboxes at the bottom: 'Save password (stored in the SAP HANA secure store)', 'Connect to the database securely using TLS/SSL (prevents data eavesdropping)', and 'Verify the server's certificate using the trusted certificate below'. An empty certificate area is shown below the checkboxes. At the bottom, there are 'OK' and 'Cancel' buttons.</p> |
| <p>51. Make sure to check the Save password (stored in the SAP HANA secure store) and Connect to the database securely using TLS/SSL (prevents data eavesdropping) options. Uncheck the Verify the server's certificate using the trusted certificate below option.</p> | <p><input checked="" type="checkbox"/> Save password (stored in the SAP HANA secure store) <input checked="" type="checkbox"/> Connect to the database securely using TLS/SSL (prevents data eavesdropping) <input type="checkbox"/> Verify the server's certificate using the trusted certificate below</p> |

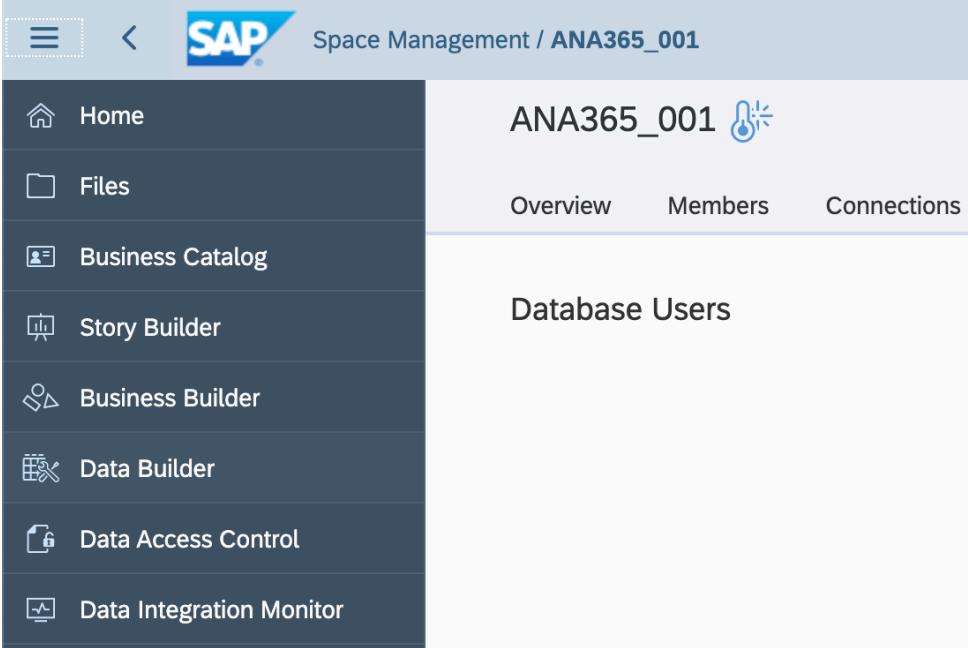
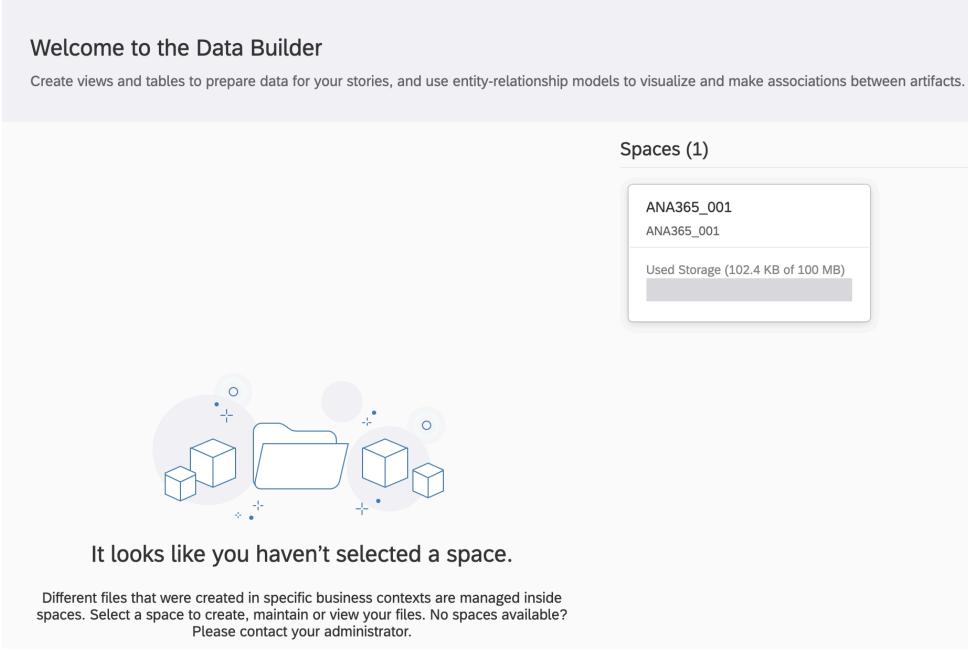
| Explanation | Screenshot |
|---|---|
| <p>52. Hit the OK button to add the database to your list of databases.</p> |  <p>The screenshot shows the SAP HANA Database Explorer interface. The title bar reads "SAP HANA Database Explorer". On the left, there is a sidebar with icons for clouds, cubes, and a gear. The main area displays a list of databases under the heading "Filter Databases". One database is selected: "bfb52d9d-33cb-42eb-93a7-5e6ee9c7cc72 (ANA365_001#DATA_INGEST)". Below the list, there is a search bar with the placeholder "Search Folders" and a magnifying glass icon. At the bottom, there is a section labeled "Catalog".</p> |

| Explanation | Screenshot |
|---|---|
| <p>53. Right-click the newly created database and select Open SQL Console.</p> |  <p>The screenshot shows the SAP HANA Database Explorer interface. A context menu is open over a database entry named "bfb52d9d-33cb-42eb-93a7-5e6ee9c7cc72 (ANA365_001#DATA_INGEST)". The menu items include: Show Overview, Show Statement Library, Properties, Add Database with Different User, Analyze SQLScript Code, Remove Database, Import Catalog Objects, Export Catalog Objects, Import Data, Export HDI Container, Import HDI Container, Open SQL Console (which is highlighted in blue), Copy Name, and Refresh.</p> |
| <p>54. Get the SQL statements from the folder in the Github repository to create and fill the table that holds the Sales Orders: https://github.com/SAP-samples/teched2020-ANA365/assets/sql-statements</p> | <p>Tbd</p> |

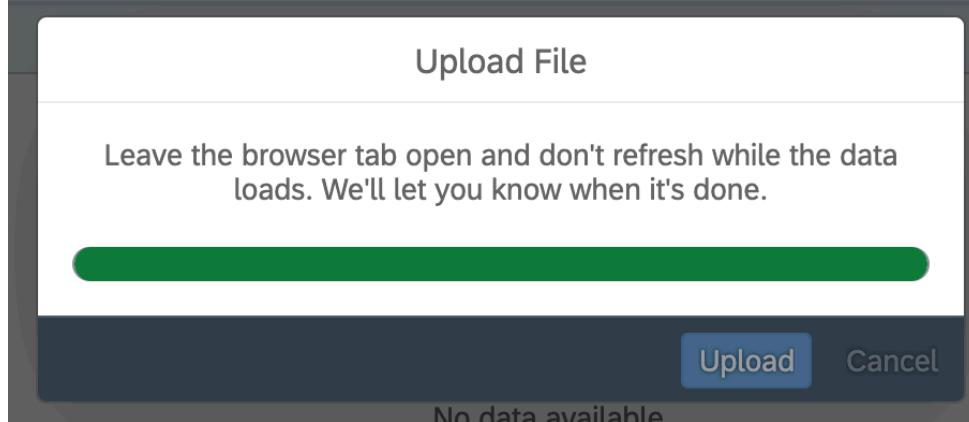
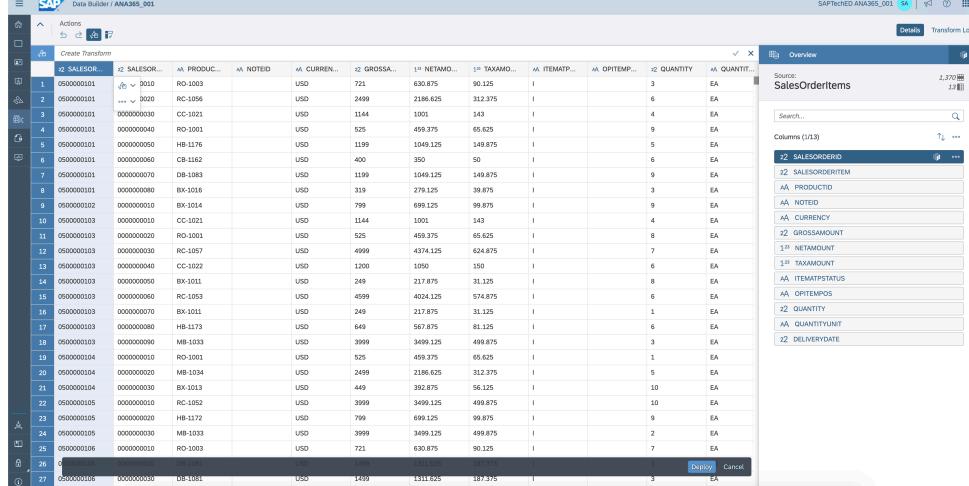
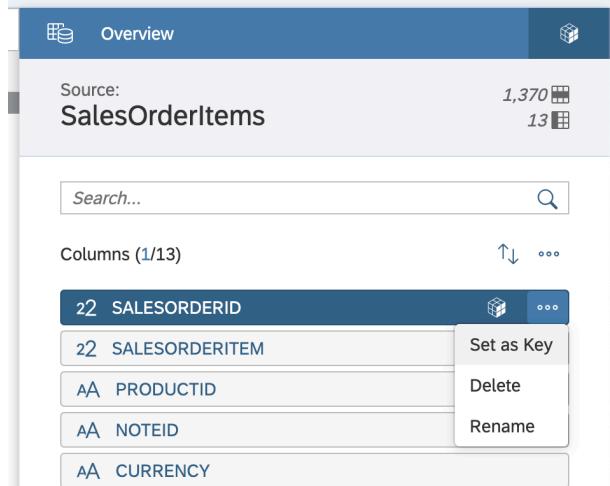
| Explanation | Screenshot |
|---|---|
| <p>55. Open the create-sales-orders.sql file and copy over the content in the SQL console opened in the SAP HANA Database Explorer.</p> |  <p>The screenshot shows the SAP HANA Database Explorer's SQL Console interface. The title bar says "SQL Console 1.sql". The main area displays the following SQL code:</p> <pre> CREATE COLUMN TABLE "SalesOrders" ("SALESORDERID" NVARCHAR(10) NOT NULL , "CREATEDBY" NVARCHAR(10), "CREATEDAT" DATETIME, "CHANGEDBY" NVARCHAR(10), "CHANGEDAT" DATETIME, "FISCALYEARPERIOD" NVARCHAR(10), "NOTEID" NVARCHAR(10), "PARTNERID" NVARCHAR(10), "SALESORG" NVARCHAR(10), "CURRENCY" NVARCHAR(10), "GROSSAMOUNT" DECIMAL(18,2), "NETAMOUNT" DECIMAL(18,2)); COMMENT ON TABLE "SalesOrders" IS 'Sales orders'; COMMENT ON COLUMN "SalesOrders"."SALESORDERID" IS 'Sales order ID'; COMMENT ON COLUMN "SalesOrders"."CREATEDBY" IS 'Created by'; COMMENT ON COLUMN "SalesOrders"."CREATEDAT" IS 'Created at date'; COMMENT ON COLUMN "SalesOrders"."CHANGEDBY" IS 'Changed by'; COMMENT ON COLUMN "SalesOrders"."CHANGEDAT" IS 'Changed at date'; COMMENT ON COLUMN "SalesOrders"."FISCALYEARPERIOD" IS 'Fiscal year period'; COMMENT ON COLUMN "SalesOrders"."NOTEID" IS 'Note ID'; COMMENT ON COLUMN "SalesOrders"."PARTNERID" IS 'Partner ID'; COMMENT ON COLUMN "SalesOrders"."SALESORG" IS 'Sales Organisation'; COMMENT ON COLUMN "SalesOrders"."CURRENCY" IS 'Currency key'; COMMENT ON COLUMN "SalesOrders"."GROSSAMOUNT" IS 'Gross amount'; COMMENT ON COLUMN "SalesOrders"."NETAMOUNT" IS 'Net amount'; </pre> |
| <p>56. Hit the green Execute button to create the Sales Order table.</p> |  <p>The screenshot shows the SAP HANA Database Explorer's SQL Console interface. The title bar says "SQL Console 1.sql". The main area displays the following message:</p> <p>1 CREATE COLUMN TABLE</p> <p>The "Execute" button is highlighted in green.</p> |

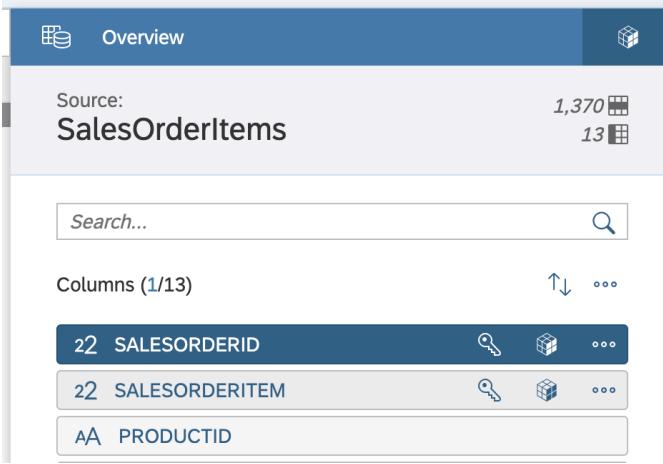
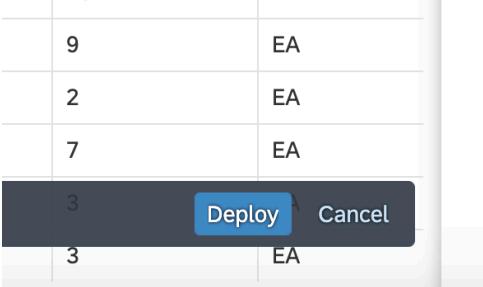
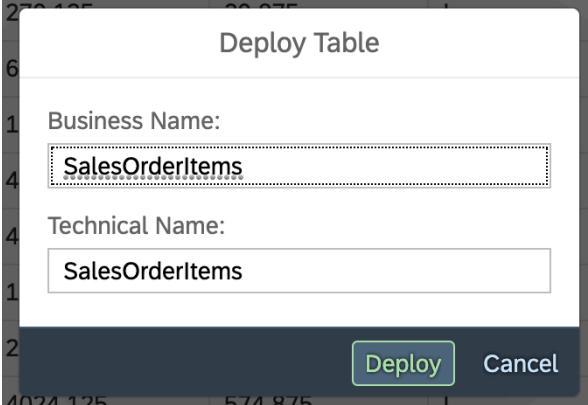
| Explanation | Screenshot |
|--|---|
| <p>57. Make sure that the table was created correctly by checking the log.</p> |  <p>The screenshot shows the SQL Console interface with the following details:</p> <ul style="list-style-type: none"> SQL Console 1.sql: The current file being edited. Production System: The system context. Connected to: bfb52d9d-33cb-42eb-93a7-5e6e Code (List 1): <pre> 1 CREATE COLUMN TABLE "SalesOrders" ("SALESORDERID" NVARCHAR(10) NOT NULL , "CREATEDBY" NVARCHAR(10), "CREATEDAT" DATETIME2(0)); 2 COMMENT ON TABLE "SalesOrders" IS 'Sales orders'; 3 COMMENT ON COLUMN "SalesOrders"."SALESORDERID" IS 'Sales order ID'; 4 COMMENT ON COLUMN "SalesOrders"."CREATEDBY" IS 'Created by'; 5 COMMENT ON COLUMN "SalesOrders"."CREATEDAT" IS 'Created at date'; 6 COMMENT ON COLUMN "SalesOrders"."CHANGEDBY" IS 'Changed by'; 7 COMMENT ON COLUMN "SalesOrders"."CHANGEDAT" IS 'Changed at date'; 8 COMMENT ON COLUMN "SalesOrders"."FISCVARIANT" IS 'Fiscal year variant'; 9 COMMENT ON COLUMN "SalesOrders"."FISCALYEARPERIOD" IS 'Fiscal year period'; 10 COMMENT ON COLUMN "SalesOrders"."NOTEID" IS 'Note ID'; 11 COMMENT ON COLUMN "SalesOrders"."PARTNERID" IS 'Partner ID'; 12 COMMENT ON COLUMN "SalesOrders"."SALESORG" IS 'Sales Organisation'; 13 COMMENT ON COLUMN "SalesOrders"."CURRENCY" IS 'Currency key'; 14 COMMENT ON COLUMN "SalesOrders"."GROSSAMOUNT" IS 'Gross amount'; 15 COMMENT ON COLUMN "SalesOrders"."NETAMOUNT" IS 'Net amount'; 16 </pre> Messages: The log of executed statements: <ul style="list-style-type: none"> Statement 'CREATE COLUMN TABLE "SalesOrders" ("SALESORDERID" NVARCHAR(10) NOT NULL , "CREATEDBY" NVARCHAR(10), ...' executed in 14 ms. Statement 'COMMENT ON TABLE "SalesOrders" IS 'Sales orders'' executed in 3 ms. Statement 'COMMENT ON COLUMN "SalesOrders"."SALESORDERID" IS 'Sales order ID'' executed in 3 ms. Statement 'COMMENT ON COLUMN "SalesOrders"."CREATEDBY" IS 'Created by'' executed in 3 ms. Statement 'COMMENT ON COLUMN "SalesOrders"."CREATEDAT" IS 'Created at date'' executed in 3 ms. Statement 'COMMENT ON COLUMN "SalesOrders"."CHANGEDBY" IS 'Changed by'' executed in 3 ms. Statement 'COMMENT ON COLUMN "SalesOrders"."CHANGEDAT" IS 'Changed at date'' executed in 4 ms. Statement 'COMMENT ON COLUMN "SalesOrders"."FISCVARIANT" IS 'Fiscal year variant'' executed in 3 ms. Statement 'COMMENT ON COLUMN "SalesOrders"."FISCALYEARPERIOD" IS 'Fiscal year period'' executed in 3 ms. Statement 'COMMENT ON COLUMN "SalesOrders"."NOTEID" IS 'Note ID'' |
| <p>58. Empty the SQL console by removing the executed statements.</p> |  <p>The screenshot shows the SQL Console interface with the following details:</p> <ul style="list-style-type: none"> SQL Console 1.sql: The current file being edited. Production System: The system context. Connected to: bfb52d9d-33cb-42eb-93a7-5e6e Code (List 1): <pre> 1 </pre> |

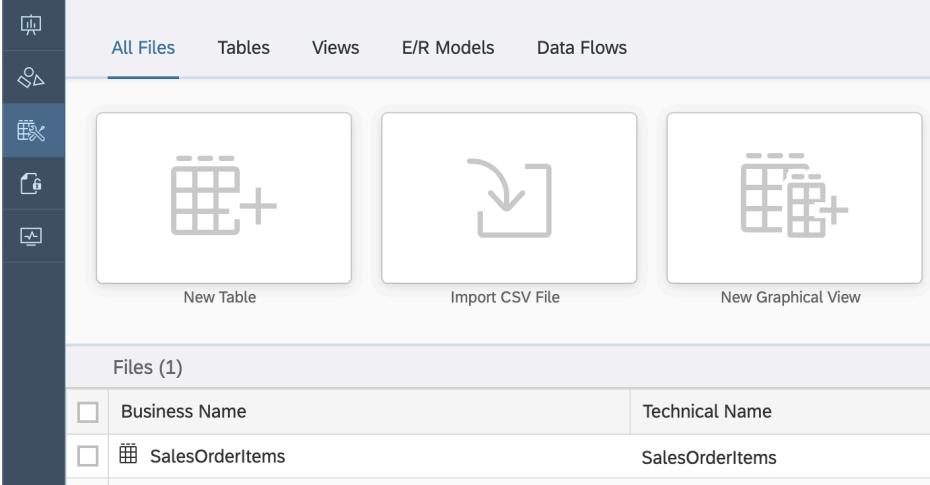
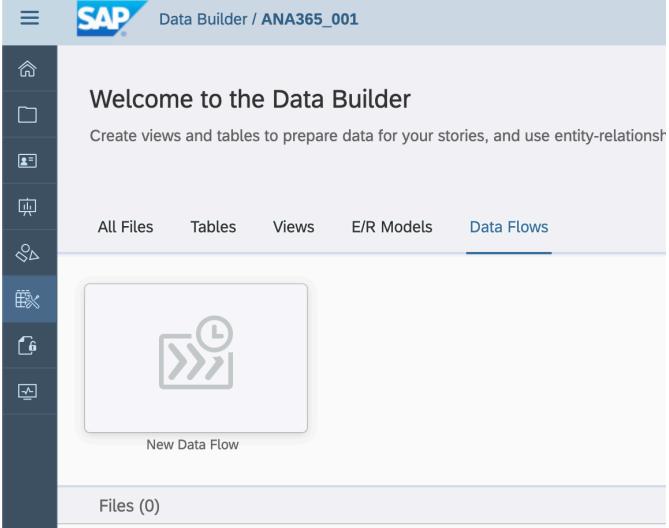
| Explanation | Screenshot |
|---|---|
| 59. Open the insert-sales-orders.sql file and copy over the SQL to fill the table you just created. |  <pre> SQL Console 1.sql x Production System Connected to: bfb52d9d-33cb-42eb-93a7-5e66e 1 INSERT INTO "SalesOrders" (SALESORDERID,CREATEDBY,CREATEDAT,CHANGEDBY,CHANGEDAT,FISCVARIANT,FISCALYEARPERIOD,NOTEID 2 INSERT INTO "SalesOrders" (SALESORDERID,CREATEDBY,CREATEDAT,CHANGEDBY,CHANGEDAT,FISCVARIANT,FISCALYEARPERIOD,NOTEID 3 INSERT INTO "SalesOrders" (SALESORDERID,CREATEDBY,CREATEDAT,CHANGEDBY,CHANGEDAT,FISCVARIANT,FISCALYEARPERIOD,NOTEID 4 INSERT INTO "SalesOrders" (SALESORDERID,CREATEDBY,CREATEDAT,CHANGEDBY,CHANGEDAT,FISCVARIANT,FISCALYEARPERIOD,NOTEID 5 INSERT INTO "SalesOrders" (SALESORDERID,CREATEDBY,CREATEDAT,CHANGEDBY,CHANGEDAT,FISCVARIANT,FISCALYEARPERIOD,NOTEID 6 INSERT INTO "SalesOrders" (SALESORDERID,CREATEDBY,CREATEDAT,CHANGEDBY,CHANGEDAT,FISCVARIANT,FISCALYEARPERIOD,NOTEID 7 INSERT INTO "SalesOrders" (SALESORDERID,CREATEDBY,CREATEDAT,CHANGEDBY,CHANGEDAT,FISCVARIANT,FISCALYEARPERIOD,NOTEID 8 INSERT INTO "SalesOrders" (SALESORDERID,CREATEDBY,CREATEDAT,CHANGEDBY,CHANGEDAT,FISCVARIANT,FISCALYEARPERIOD,NOTEID 9 INSERT INTO "SalesOrders" (SALESORDERID,CREATEDBY,CREATEDAT,CHANGEDBY,CHANGEDAT,FISCVARIANT,FISCALYEARPERIOD,NOTEID 10 INSERT INTO "SalesOrders" (SALESORDERID,CREATEDBY,CREATEDAT,CHANGEDBY,CHANGEDAT,FISCVARIANT,FISCALYEARPERIOD,NOTEID 11 INSERT INTO "SalesOrders" (SALESORDERID,CREATEDBY,CREATEDAT,CHANGEDBY,CHANGEDAT,FISCVARIANT,FISCALYEARPERIOD,NOTEID 12 INSERT INTO "SalesOrders" (SALESORDERID,CREATEDBY,CREATEDAT,CHANGEDBY,CHANGEDAT,FISCVARIANT,FISCALYEARPERIOD,NOTEID 13 INSERT INTO "SalesOrders" (SALESORDERID,CREATEDBY,CREATEDAT,CHANGEDBY,CHANGEDAT,FISCVARIANT,FISCALYEARPERIOD,NOTEID 14 INSERT INTO "SalesOrders" (SALESORDERID,CREATEDBY,CREATEDAT,CHANGEDBY,CHANGEDAT,FISCVARIANT,FISCALYEARPERIOD,NOTEID 15 INSERT INTO "SalesOrders" (SALESORDERID,CREATEDBY,CREATEDAT,CHANGEDBY,CHANGEDAT,FISCVARIANT,FISCALYEARPERIOD,NOTEID 16 </pre> |
| 60. Again hit the green Execute button and check the log for the successful execution. |  <p>Messages x History</p> <pre> Statement 'INSERT INTO "SalesOrders" ...' executed in 8 ms - Rows Affected: 1 Statement 'INSERT INTO "SalesOrders" ...' executed in 3 ms - Rows Affected: 1 Statement 'INSERT INTO "SalesOrders" ...' executed in 3 ms - Rows Affected: 1 Statement 'INSERT INTO "SalesOrders" ...' executed in 2 ms - Rows Affected: 1 Statement 'INSERT INTO "SalesOrders" ...' executed in 3 ms - Rows Affected: 1 Statement 'INSERT INTO "SalesOrders" ...' executed in 3 ms - Rows Affected: 1 Statement 'INSERT INTO "SalesOrders" ...' executed in 3 ms - Rows Affected: 1 Statement 'INSERT INTO "SalesOrders" ...' executed in 3 ms - Rows Affected: 1 Statement 'INSERT INTO "SalesOrders" ...' executed in 3 ms - Rows Affected: 1 Statement 'INSERT INTO "SalesOrders" ...' executed in 3 ms - Rows Affected: 1 Statement 'INSERT INTO "SalesOrders" ...' executed in 3 ms - Rows Affected: 1 Statement 'INSERT INTO "SalesOrders" ...' executed in 3 ms - Rows Affected: 1 </pre> |
| 61. Congratulations! | You just used an external tool to connect to your SAP Data Warehouse Cloud space via SQL, created a table and inserted data! This is one example how you can use actually any external 3rd party tool, for example also open source applications like DBeaver, to connect to your SAP Data Warehouse Cloud space from the outside and ingest data using SQL. This way you can for example integrate your SAP Data Warehouse Cloud tenant in your already existing ETL processes. |

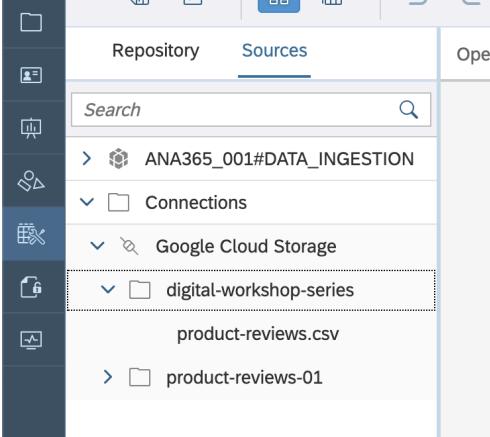
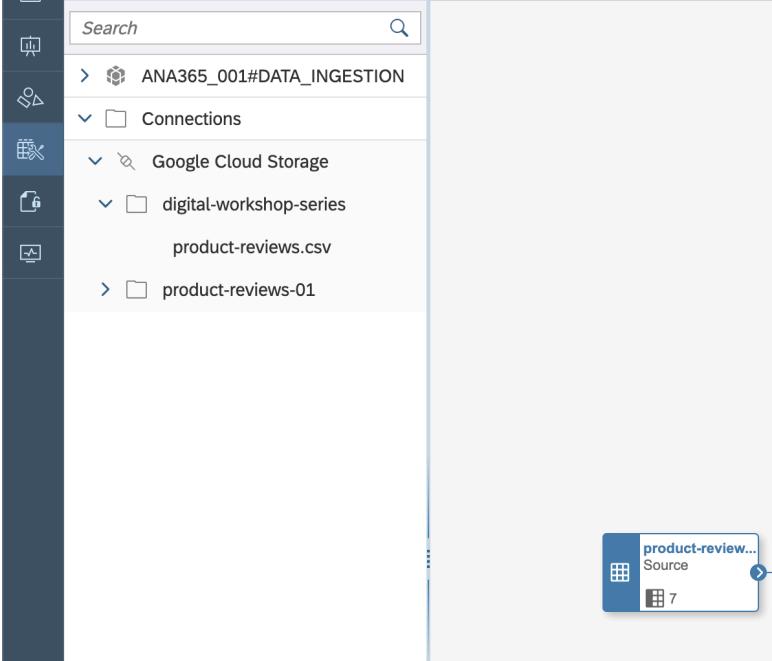
| Explanation | Screenshot |
|--|---|
| <p>62. Head back to your SAP Data Warehouse Cloud tenant and navigate to the Data Builder.</p> |  <p>The screenshot shows the SAP Space Management interface for tenant 'ANA365_001'. The left sidebar contains links for Home, Files, Business Catalog, Story Builder, Business Builder, Data Builder (which is highlighted), Data Access Control, and Data Integration Monitor. The main area is titled 'Database Users'.</p> |
| <p>63. Select your space.</p> |  <p>The screenshot shows the 'Welcome to the Data Builder' screen. It includes a message to create views and tables, a 'Spaces (1)' section listing 'ANA365_001' with 102.4 KB used storage of 100 MB, and a note about managing files in spaces. Below is a message stating 'It looks like you haven't selected a space.' with a file management icon.</p> |

| Explanation | Screenshot |
|---|---|
| <p>64. From the list of tiles select the Import CSV File tile.</p> | <p>The screenshot shows the SAP Data Warehouse Cloud interface. At the top, there is a navigation bar with tabs: 'All Files' (which is underlined), 'Tables', 'Views', 'E/R Models', and 'Data Flows'. Below the navigation bar are two large tiles. The left tile, labeled 'New Table', features a grid icon with a plus sign. The right tile, labeled 'Import CSV File', features an arrow pointing into a square. Both tiles have their respective labels centered below them.</p> |
| <p>65. Get the required CSV file SalesOrderItems.csv from the Github repository: https://github.com/SAP-samples/teched2020-ANA365/assets/step-65 Hit the Select Source File button and select the SalesOrderItems.csv file you just downloaded.</p> | <p>The screenshot shows a modal dialog box titled 'Upload File'. Inside the dialog, there is a 'Select Source File' button, a message 'No file selected' with an information icon, and two buttons at the bottom: 'Upload' and 'Cancel'. The background of the dialog is dark grey, and the text is white or light grey.</p> |
| <p>66. Leave all options as is and hit the Upload button.</p> | <p>The screenshot shows the same 'Upload File' dialog as the previous step, but with more details. The 'Select Source File' button now displays the file path 'SalesOrderItems.csv'. A checkbox labeled 'Use first row as column header' is checked. A dropdown menu for 'CSV Delimiter' is open, showing the option 'Auto-detect'. The 'Upload' and 'Cancel' buttons are visible at the bottom.</p> |

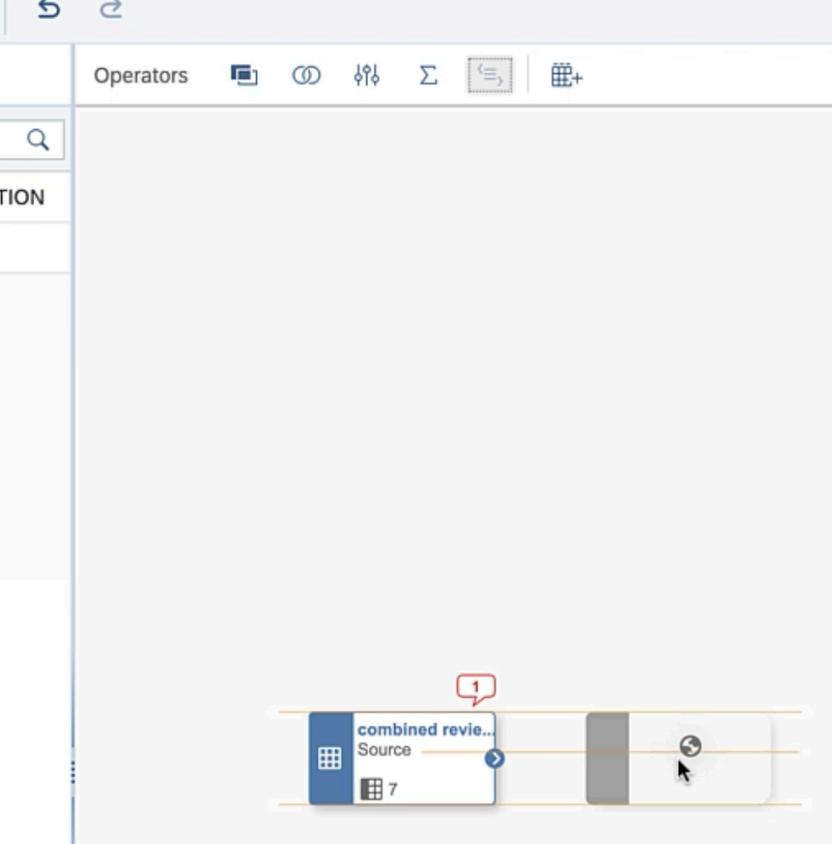
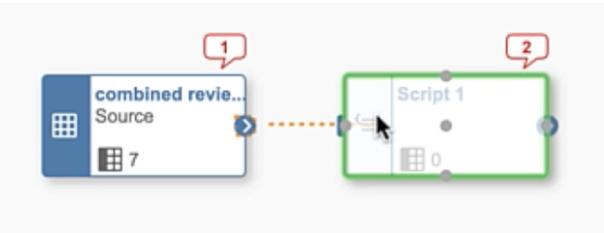
| Explanation | Screenshot | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 67. Wait until the file was uploaded to the tenant. |  <p>Upload File</p> <p>Leave the browser tab open and don't refresh while the data loads. We'll let you know when it's done.</p> <p>No data available.</p> <p>Upload Cancel</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 68. Make sure that the data is shown and the headers are identified correctly. |  <table border="1"> <thead> <tr> <th>Z2 SALESORDERID</th> <th>AA SALESORDERITEM</th> <th>AA PRODUCTID</th> <th>AA NOTEID</th> <th>AA CURRENCY</th> <th>Z2 GROSSAMOUNT</th> <th>1B NETAMOUNT</th> <th>1B TAXAMOUNT</th> <th>AA ITEMSTATUS</th> <th>AA OPITEMPOS</th> <th>Z2 QUANTITY</th> <th>AA QUANTITYUNIT</th> <th>Z2 DELIVERYDATE</th> </tr> </thead> <tbody> <tr><td>1 05000000101</td><td>000000010</td><td>PO-1003</td><td>USD</td><td>721</td><td>630.875</td><td>90.125</td><td>1</td><td>I</td><td></td><td>3</td><td>EA</td><td></td></tr> <tr><td>2 05000000101</td><td>... 0000010</td><td>RC-1056</td><td>USD</td><td>2499</td><td>2186.625</td><td>312.375</td><td>1</td><td>I</td><td></td><td>6</td><td>EA</td><td></td></tr> <tr><td>3 05000000101</td><td>00000000000</td><td>CC-1022</td><td>USD</td><td>1144</td><td>1001</td><td>143</td><td>I</td><td>I</td><td></td><td>4</td><td>EA</td><td></td></tr> <tr><td>4 05000000101</td><td>00000000040</td><td>PO-1001</td><td>USD</td><td>525</td><td>459.375</td><td>65.625</td><td>I</td><td>I</td><td></td><td>9</td><td>EA</td><td></td></tr> <tr><td>5 05000000101</td><td>00000000050</td><td>HB-1176</td><td>USD</td><td>1199</td><td>1049.125</td><td>149.875</td><td>I</td><td>I</td><td></td><td>5</td><td>EA</td><td></td></tr> <tr><td>6 05000000101</td><td>00000000060</td><td>CB-1162</td><td>USD</td><td>400</td><td>350</td><td>50</td><td>I</td><td>I</td><td></td><td>6</td><td>EA</td><td></td></tr> <tr><td>7 05000000101</td><td>00000000070</td><td>DB-1083</td><td>USD</td><td>1199</td><td>1049.125</td><td>149.875</td><td>I</td><td>I</td><td></td><td>9</td><td>EA</td><td></td></tr> <tr><td>8 05000000101</td><td>00000000080</td><td>EX-1016</td><td>USD</td><td>319</td><td>274.125</td><td>39.875</td><td>I</td><td>I</td><td></td><td>3</td><td>EA</td><td></td></tr> <tr><td>9 05000000102</td><td>00000000010</td><td>EX-1014</td><td>USD</td><td>799</td><td>699.125</td><td>99.875</td><td>I</td><td>I</td><td></td><td>9</td><td>EA</td><td></td></tr> <tr><td>10 05000000103</td><td>00000000010</td><td>CC-1022</td><td>USD</td><td>1144</td><td>1001</td><td>143</td><td>I</td><td>I</td><td></td><td>4</td><td>EA</td><td></td></tr> <tr><td>11 05000000103</td><td>00000000020</td><td>PO-1001</td><td>USD</td><td>525</td><td>459.375</td><td>65.625</td><td>I</td><td>I</td><td></td><td>8</td><td>EA</td><td></td></tr> <tr><td>12 05000000103</td><td>00000000030</td><td>RC-1057</td><td>USD</td><td>4999</td><td>4374.125</td><td>624.875</td><td>I</td><td>I</td><td></td><td>7</td><td>EA</td><td></td></tr> <tr><td>13 05000000103</td><td>00000000040</td><td>CC-1022</td><td>USD</td><td>1200</td><td>1050</td><td>150</td><td>I</td><td>I</td><td></td><td>6</td><td>EA</td><td></td></tr> <tr><td>14 05000000103</td><td>00000000050</td><td>EX-1011</td><td>USD</td><td>249</td><td>217.875</td><td>31.125</td><td>I</td><td>I</td><td></td><td>8</td><td>EA</td><td></td></tr> <tr><td>15 05000000103</td><td>00000000060</td><td>RC-1053</td><td>USD</td><td>4599</td><td>4024.125</td><td>574.875</td><td>I</td><td>I</td><td></td><td>6</td><td>EA</td><td></td></tr> <tr><td>16 05000000103</td><td>00000000070</td><td>EX-1011</td><td>USD</td><td>249</td><td>217.875</td><td>31.125</td><td>I</td><td>I</td><td></td><td>1</td><td>EA</td><td></td></tr> <tr><td>17 05000000103</td><td>00000000080</td><td>HB-1176</td><td>USD</td><td>649</td><td>567.875</td><td>81.125</td><td>I</td><td>I</td><td></td><td>6</td><td>EA</td><td></td></tr> <tr><td>18 05000000103</td><td>00000000090</td><td>MB-1033</td><td>USD</td><td>3999</td><td>3499.125</td><td>499.875</td><td>I</td><td>I</td><td></td><td>3</td><td>EA</td><td></td></tr> <tr><td>19 05000000104</td><td>00000000100</td><td>PO-1001</td><td>USD</td><td>525</td><td>459.375</td><td>65.625</td><td>I</td><td>I</td><td></td><td>1</td><td>EA</td><td></td></tr> <tr><td>20 05000000104</td><td>00000000200</td><td>MB-1154</td><td>USD</td><td>2499</td><td>2186.625</td><td>312.375</td><td>I</td><td>I</td><td></td><td>5</td><td>EA</td><td></td></tr> <tr><td>21 05000000104</td><td>00000000300</td><td>EX-1013</td><td>USD</td><td>449</td><td>392.875</td><td>56.125</td><td>I</td><td>I</td><td></td><td>10</td><td>EA</td><td></td></tr> <tr><td>22 05000000105</td><td>00000000010</td><td>RC-1052</td><td>USD</td><td>3999</td><td>3499.125</td><td>499.875</td><td>I</td><td>I</td><td></td><td>10</td><td>EA</td><td></td></tr> <tr><td>23 05000000105</td><td>00000000020</td><td>HB-1172</td><td>USD</td><td>799</td><td>699.125</td><td>99.875</td><td>I</td><td>I</td><td></td><td>9</td><td>EA</td><td></td></tr> <tr><td>24 05000000105</td><td>00000000030</td><td>MB-1033</td><td>USD</td><td>3999</td><td>3499.125</td><td>499.875</td><td>I</td><td>I</td><td></td><td>2</td><td>EA</td><td></td></tr> <tr><td>25 05000000106</td><td>00000000010</td><td>PO-1003</td><td>USD</td><td>721</td><td>630.875</td><td>90.125</td><td>I</td><td>I</td><td></td><td>7</td><td>EA</td><td></td></tr> <tr><td>26 05000000106</td><td>00000000020</td><td>EX-1013</td><td>USD</td><td>1000</td><td>833.125</td><td>125.000</td><td>I</td><td>I</td><td></td><td>1</td><td>EA</td><td></td></tr> <tr><td>27 05000000106</td><td>00000000030</td><td>DB-1081</td><td>USD</td><td>1499</td><td>1311.825</td><td>187.575</td><td>I</td><td>I</td><td></td><td>3</td><td>EA</td><td></td></tr> </tbody> </table> | Z2 SALESORDERID | AA SALESORDERITEM | AA PRODUCTID | AA NOTEID | AA CURRENCY | Z2 GROSSAMOUNT | 1B NETAMOUNT | 1B TAXAMOUNT | AA ITEMSTATUS | AA OPITEMPOS | Z2 QUANTITY | AA QUANTITYUNIT | Z2 DELIVERYDATE | 1 05000000101 | 000000010 | PO-1003 | USD | 721 | 630.875 | 90.125 | 1 | I | | 3 | EA | | 2 05000000101 | ... 0000010 | RC-1056 | USD | 2499 | 2186.625 | 312.375 | 1 | I | | 6 | EA | | 3 05000000101 | 00000000000 | CC-1022 | USD | 1144 | 1001 | 143 | I | I | | 4 | EA | | 4 05000000101 | 00000000040 | PO-1001 | USD | 525 | 459.375 | 65.625 | I | I | | 9 | EA | | 5 05000000101 | 00000000050 | HB-1176 | USD | 1199 | 1049.125 | 149.875 | I | I | | 5 | EA | | 6 05000000101 | 00000000060 | CB-1162 | USD | 400 | 350 | 50 | I | I | | 6 | EA | | 7 05000000101 | 00000000070 | DB-1083 | USD | 1199 | 1049.125 | 149.875 | I | I | | 9 | EA | | 8 05000000101 | 00000000080 | EX-1016 | USD | 319 | 274.125 | 39.875 | I | I | | 3 | EA | | 9 05000000102 | 00000000010 | EX-1014 | USD | 799 | 699.125 | 99.875 | I | I | | 9 | EA | | 10 05000000103 | 00000000010 | CC-1022 | USD | 1144 | 1001 | 143 | I | I | | 4 | EA | | 11 05000000103 | 00000000020 | PO-1001 | USD | 525 | 459.375 | 65.625 | I | I | | 8 | EA | | 12 05000000103 | 00000000030 | RC-1057 | USD | 4999 | 4374.125 | 624.875 | I | I | | 7 | EA | | 13 05000000103 | 00000000040 | CC-1022 | USD | 1200 | 1050 | 150 | I | I | | 6 | EA | | 14 05000000103 | 00000000050 | EX-1011 | USD | 249 | 217.875 | 31.125 | I | I | | 8 | EA | | 15 05000000103 | 00000000060 | RC-1053 | USD | 4599 | 4024.125 | 574.875 | I | I | | 6 | EA | | 16 05000000103 | 00000000070 | EX-1011 | USD | 249 | 217.875 | 31.125 | I | I | | 1 | EA | | 17 05000000103 | 00000000080 | HB-1176 | USD | 649 | 567.875 | 81.125 | I | I | | 6 | EA | | 18 05000000103 | 00000000090 | MB-1033 | USD | 3999 | 3499.125 | 499.875 | I | I | | 3 | EA | | 19 05000000104 | 00000000100 | PO-1001 | USD | 525 | 459.375 | 65.625 | I | I | | 1 | EA | | 20 05000000104 | 00000000200 | MB-1154 | USD | 2499 | 2186.625 | 312.375 | I | I | | 5 | EA | | 21 05000000104 | 00000000300 | EX-1013 | USD | 449 | 392.875 | 56.125 | I | I | | 10 | EA | | 22 05000000105 | 00000000010 | RC-1052 | USD | 3999 | 3499.125 | 499.875 | I | I | | 10 | EA | | 23 05000000105 | 00000000020 | HB-1172 | USD | 799 | 699.125 | 99.875 | I | I | | 9 | EA | | 24 05000000105 | 00000000030 | MB-1033 | USD | 3999 | 3499.125 | 499.875 | I | I | | 2 | EA | | 25 05000000106 | 00000000010 | PO-1003 | USD | 721 | 630.875 | 90.125 | I | I | | 7 | EA | | 26 05000000106 | 00000000020 | EX-1013 | USD | 1000 | 833.125 | 125.000 | I | I | | 1 | EA | | 27 05000000106 | 00000000030 | DB-1081 | USD | 1499 | 1311.825 | 187.575 | I | I | | 3 | EA | |
| Z2 SALESORDERID | AA SALESORDERITEM | AA PRODUCTID | AA NOTEID | AA CURRENCY | Z2 GROSSAMOUNT | 1B NETAMOUNT | 1B TAXAMOUNT | AA ITEMSTATUS | AA OPITEMPOS | Z2 QUANTITY | AA QUANTITYUNIT | Z2 DELIVERYDATE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 05000000101 | 000000010 | PO-1003 | USD | 721 | 630.875 | 90.125 | 1 | I | | 3 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 05000000101 | ... 0000010 | RC-1056 | USD | 2499 | 2186.625 | 312.375 | 1 | I | | 6 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 05000000101 | 00000000000 | CC-1022 | USD | 1144 | 1001 | 143 | I | I | | 4 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 05000000101 | 00000000040 | PO-1001 | USD | 525 | 459.375 | 65.625 | I | I | | 9 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 05000000101 | 00000000050 | HB-1176 | USD | 1199 | 1049.125 | 149.875 | I | I | | 5 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 05000000101 | 00000000060 | CB-1162 | USD | 400 | 350 | 50 | I | I | | 6 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 05000000101 | 00000000070 | DB-1083 | USD | 1199 | 1049.125 | 149.875 | I | I | | 9 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 05000000101 | 00000000080 | EX-1016 | USD | 319 | 274.125 | 39.875 | I | I | | 3 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 05000000102 | 00000000010 | EX-1014 | USD | 799 | 699.125 | 99.875 | I | I | | 9 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 05000000103 | 00000000010 | CC-1022 | USD | 1144 | 1001 | 143 | I | I | | 4 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 05000000103 | 00000000020 | PO-1001 | USD | 525 | 459.375 | 65.625 | I | I | | 8 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 05000000103 | 00000000030 | RC-1057 | USD | 4999 | 4374.125 | 624.875 | I | I | | 7 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 05000000103 | 00000000040 | CC-1022 | USD | 1200 | 1050 | 150 | I | I | | 6 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 05000000103 | 00000000050 | EX-1011 | USD | 249 | 217.875 | 31.125 | I | I | | 8 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 05000000103 | 00000000060 | RC-1053 | USD | 4599 | 4024.125 | 574.875 | I | I | | 6 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 05000000103 | 00000000070 | EX-1011 | USD | 249 | 217.875 | 31.125 | I | I | | 1 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 05000000103 | 00000000080 | HB-1176 | USD | 649 | 567.875 | 81.125 | I | I | | 6 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 05000000103 | 00000000090 | MB-1033 | USD | 3999 | 3499.125 | 499.875 | I | I | | 3 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 05000000104 | 00000000100 | PO-1001 | USD | 525 | 459.375 | 65.625 | I | I | | 1 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 05000000104 | 00000000200 | MB-1154 | USD | 2499 | 2186.625 | 312.375 | I | I | | 5 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 05000000104 | 00000000300 | EX-1013 | USD | 449 | 392.875 | 56.125 | I | I | | 10 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 05000000105 | 00000000010 | RC-1052 | USD | 3999 | 3499.125 | 499.875 | I | I | | 10 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 05000000105 | 00000000020 | HB-1172 | USD | 799 | 699.125 | 99.875 | I | I | | 9 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 05000000105 | 00000000030 | MB-1033 | USD | 3999 | 3499.125 | 499.875 | I | I | | 2 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 05000000106 | 00000000010 | PO-1003 | USD | 721 | 630.875 | 90.125 | I | I | | 7 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26 05000000106 | 00000000020 | EX-1013 | USD | 1000 | 833.125 | 125.000 | I | I | | 1 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27 05000000106 | 00000000030 | DB-1081 | USD | 1499 | 1311.825 | 187.575 | I | I | | 3 | EA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 69. Select the columns SALESORDERID and SALESORDERITEM as key fields. |  <p>Source: SalesOrderItems 1,370 13</p> <p>Search...</p> <p>Columns (1/13)</p> <table border="1"> <thead> <tr> <th>Z2 SALESORDERID</th> <th>Set as Key</th> </tr> </thead> <tbody> <tr><td>Z2 SALESORDERITEM</td><td>Delete</td></tr> <tr><td>AA PRODUCTID</td><td>Rename</td></tr> <tr><td>AA NOTEID</td><td></td></tr> <tr><td>AA CURRENCY</td><td></td></tr> </tbody> </table> | Z2 SALESORDERID | Set as Key | Z2 SALESORDERITEM | Delete | AA PRODUCTID | Rename | AA NOTEID | | AA CURRENCY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Z2 SALESORDERID | Set as Key | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Z2 SALESORDERITEM | Delete | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AA PRODUCTID | Rename | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AA NOTEID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AA CURRENCY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

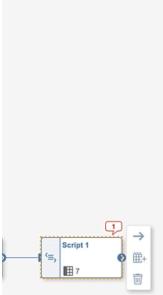
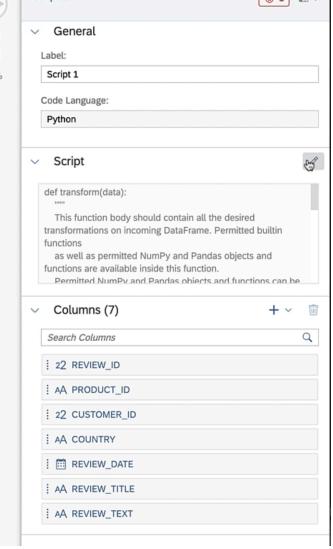
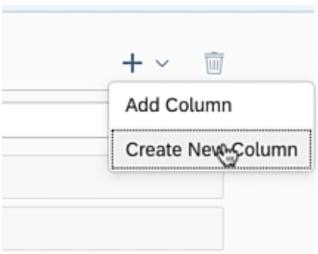
| Explanation | Screenshot |
|--|--|
| 70. Make sure that both columns are enabled as key fields. |  |
| 71. Hit Deploy to open the dialog for deploying the table into your space. |  |
| 72. Enter a Business Name and Technical Name and deploy the table into your space. |  |

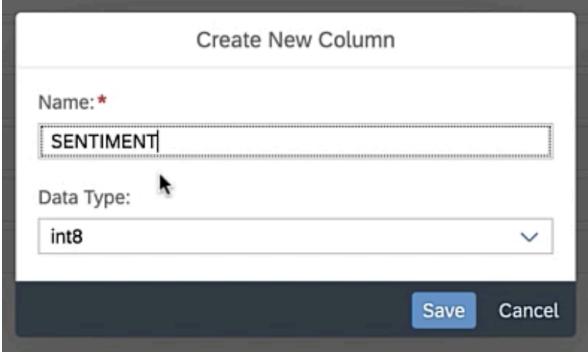
| Explanation | Screenshot |
|--|--|
| <p>73. Make sure that the table was correctly created in your space and is visible in the Data Builder overview.</p> |  |
| <p>74. Congratulations!</p> | <p>You have successfully uploaded data into your SAP Data Warehouse Cloud space using the CSV file upload! As a next step we will continue loading data into your space using the data flow feature.</p> |
| <p>75. Select the New Data Flow tile.</p> |  |

| Explanation | Screenshot |
|---|--|
| 76. Switch to the Sources tab and navigate to the product reviews folder: Connections > Google Cloud Storage > digital-workshop-series |  A screenshot of the SAP Data Warehouse Cloud interface. The top navigation bar has tabs for 'Repository' and 'Sources'. The 'Sources' tab is active, indicated by a blue underline. Below the tabs is a search bar with the placeholder 'Search'. The main content area shows a tree view of data sources. At the top level, there is a node for 'ANA365_001#DATA_INGESTION'. Below it, under 'Connections', is a node for 'Google Cloud Storage', which contains a sub-node named 'digital-workshop-series'. Inside this folder, two files are listed: 'product-reviews.csv' and 'product-reviews-01'. The 'product-reviews.csv' file is highlighted with a dotted selection box. |
| 77. Select the product-reviews.csv file and drag it from the tree on the left onto the canvas. |  A screenshot of the SAP Data Warehouse Cloud interface, similar to the previous one but with a different view. The tree view on the left shows the same structure: 'ANA365_001#DATA_INGESTION' > 'Connections' > 'Google Cloud Storage' > 'digital-workshop-series' > 'product-reviews.csv'. However, the right side of the screen is now a blank canvas. A small icon of a source symbol with the text 'product-review...' and 'Source' is visible near the bottom center of the canvas area, indicating that the file has been selected and is ready to be拖动 (dragged) onto the canvas. |

| Explanation | Screenshot |
|--|------------|
| 78. Make sure that the CSV properties are set correctly by selecting the added node and expanding the CSV properties section on the left. | |
| 79. In the Operators button bar above the canvas you can use several different operators for working with the data sets in your data flow. | |

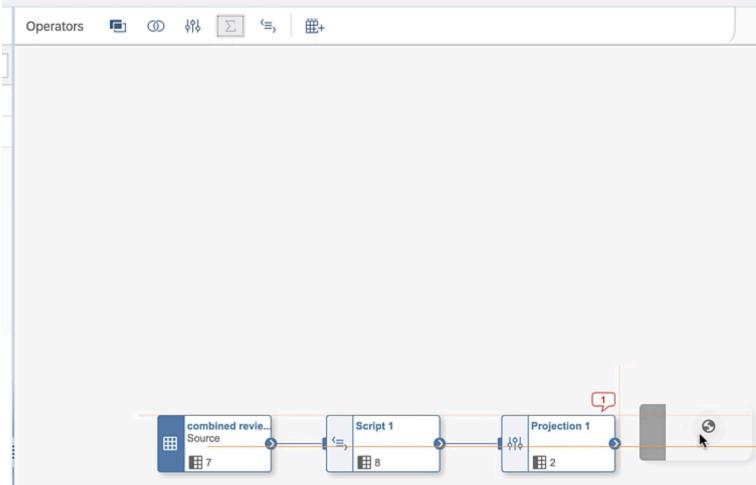
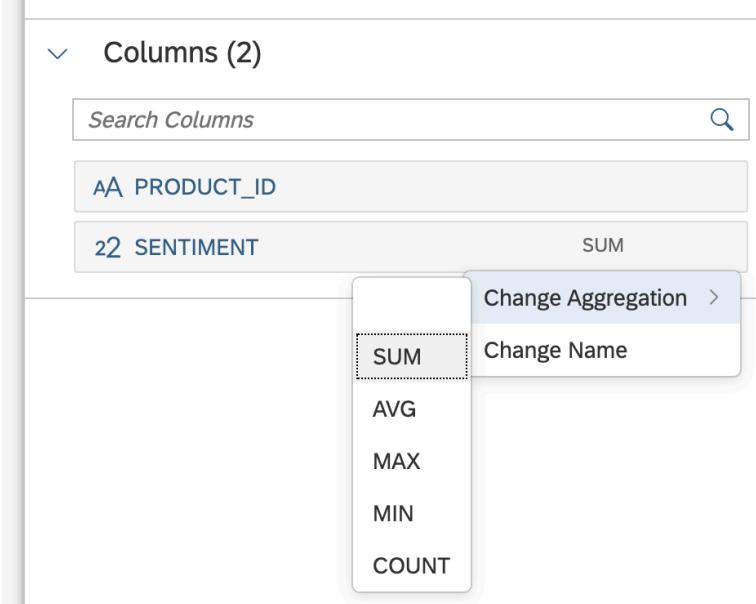
| Explanation | Screenshot |
|--|---|
| <p>80. First, we want calculate a sentiment from the available product reviews. Add the Script operator as a target node after the combined reviews source node.</p> |  <p>The screenshot shows the SAP Data Warehouse Cloud Data Flow interface. A 'combined review...' Source node (blue) is connected to a target node (grey). A red callout bubble labeled '1' points to the output port of the Source node. A red callout bubble labeled '2' points to the input port of the target node. The interface includes a toolbar with operators like Union, Intersection, Difference, and Sum, and a sidebar with a search function.</p> |
| <p>81. Connect the two nodes by dragging a line from the left to the right node.</p> |  <p>The screenshot shows the SAP Data Warehouse Cloud Data Flow interface with two nodes: a 'combined review...' Source node and a 'Script 1' target node. A dashed orange line is being drawn from the output port of the Source node to the input port of the 'Script 1' node, indicating the connection process. Red callout bubbles labeled '1' and '2' point to the respective ports.</p> |

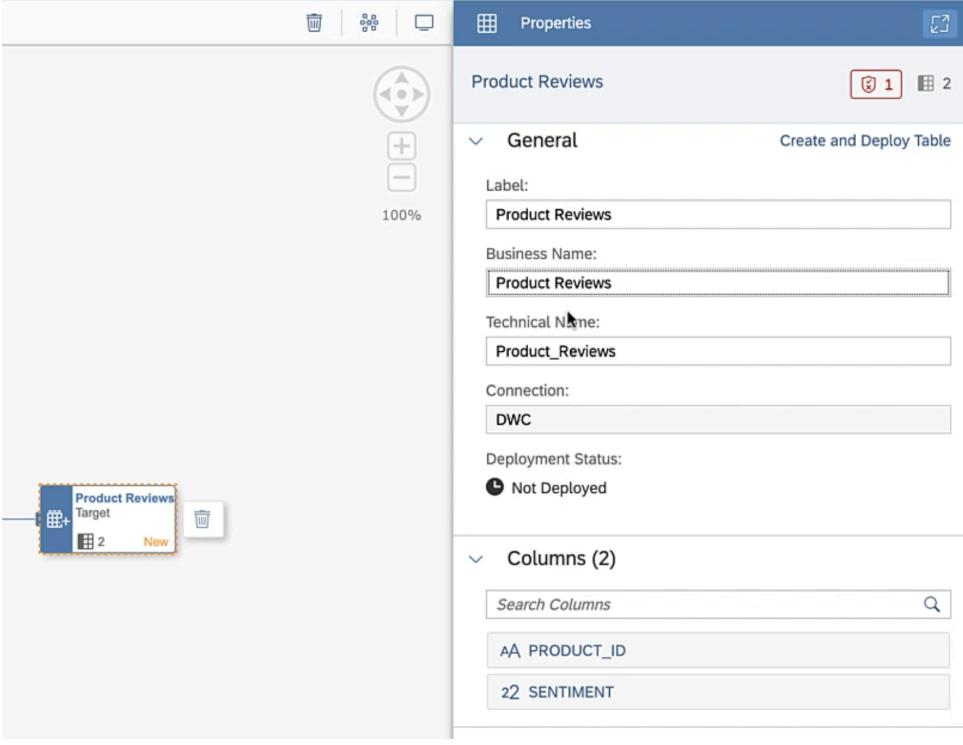
| Explanation | Screenshot |
|--|---|
| 82. Select the Script node and navigate to the Script details by selecting the Edit button on the right. |   |
| 83. Select the Columns section. |  |
| 84. Add a new column named SENTIMENT with data type INT8. |  |

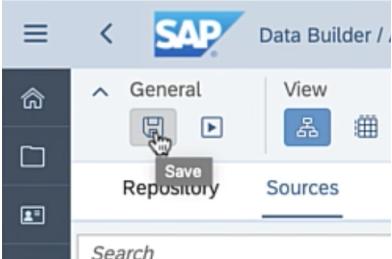
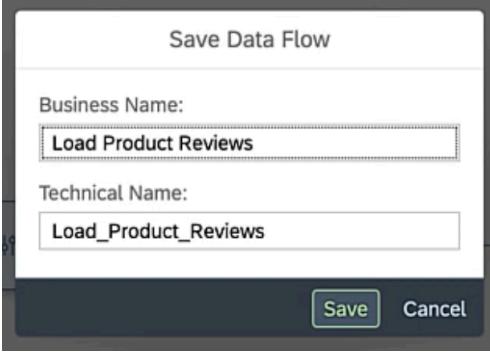
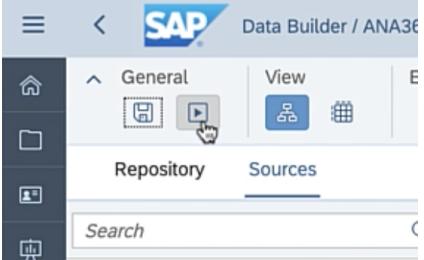
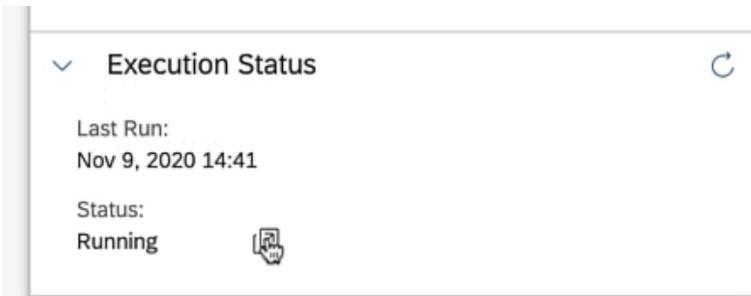
| Explanation | Screenshot |
|--|---|
| 85. Confirm the details by clicking Save. |  |
| 86. Switch to the Script section and start entering your python script for a sentiment analysis. |  |
| 87. It's up to you! | <p>Here's the thing: Are you a Python expert? We've got a challenge for you!</p> <p>You can either try to figure out the right script yourself using the pandas library. Pro-tip: Check out the pandas data frame apply method documentation here: https://pandas.pydata.org/pandas-docs/stable/reference/api/pandas.DataFrame.apply.html</p> <p>To make your life easier, we have already provided you with a list of predefined key words and assigned sentiments in the file assets/step-data-flow-script/sentiment-key-words.py</p> <p>Using the list of words and assigned sentiment values (1: positive; -1: negative; word not mentioned: neutral / 0) you want to do two things:</p> <ol style="list-style-type: none"> 1) Define a function that takes a row from the input data and checks whether the column REVIEW_TITLE contains any of the words from the words sentiment array. If a match is found, you want to return the sentiment associated with this word, otherwise (no match) you want to return zero using the string.lower() and string.find() methods. 2) You want to use the pandas dataframe apply() function to loop over the data and call the function defined in 1) for each row. Make sure to specify the axis as 1 and the result_type=reduce! |

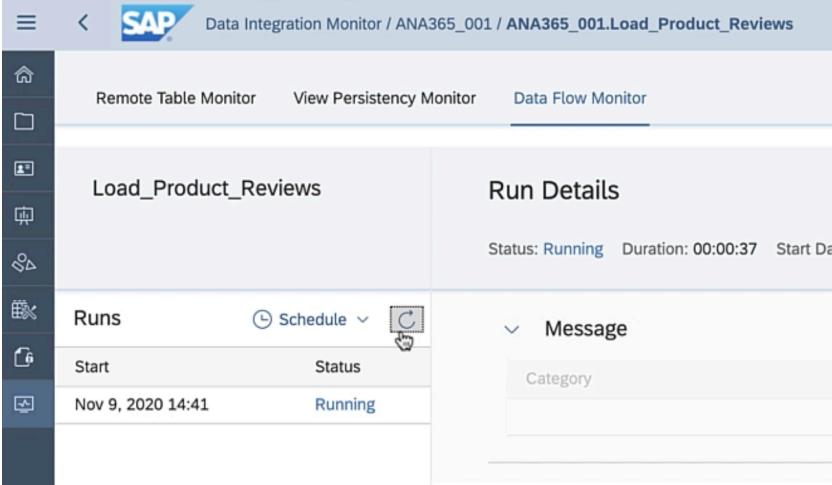
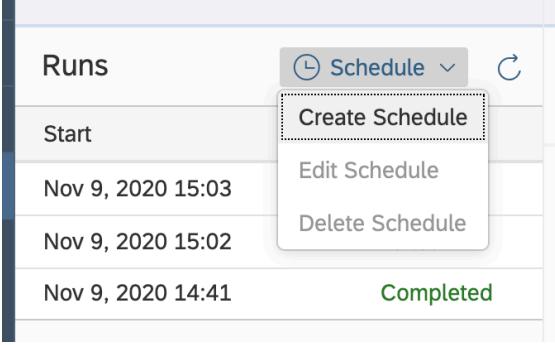
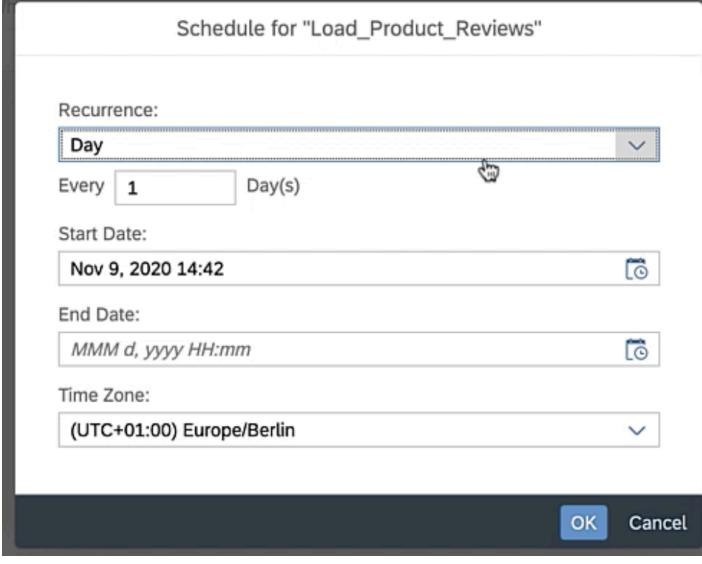
| Explanation | Screenshot |
|--|---|
| 88. Want to take the quick route? | Ok, fair enough – here's the deal. You can use the pre-build solution from the assets/step-data-flow-script/sentiment-analysis-script.py file. If you do so, don't put the blame on us that the solution is not the nicest or you finished the hands-on well before the scheduled 2hrs! ;-) |
| 89. Add a Projection node to filter out unwanted columns or to apply a filter on the data to be extracted. | |

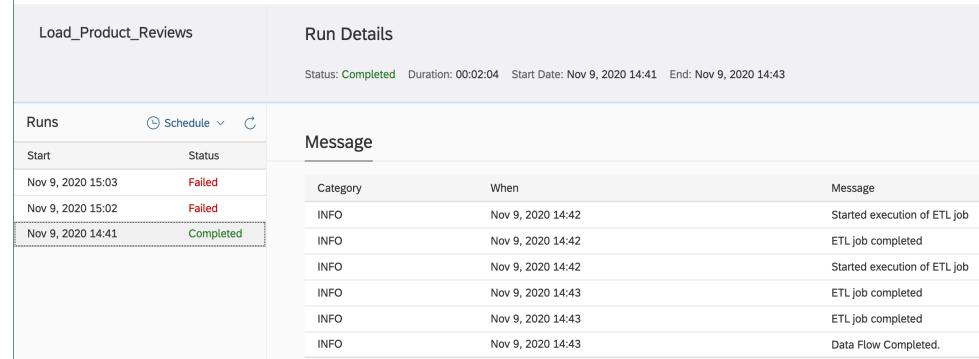
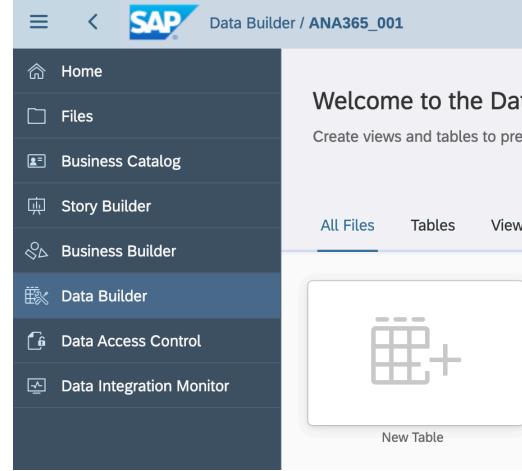
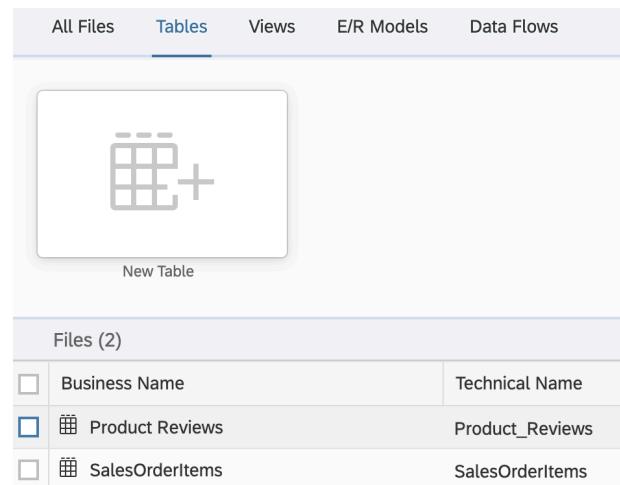
| Explanation | Screenshot |
|--|--|
| <p>90. Select the added Projection node and hide the following columns from the Details screen on the right:</p> <ul style="list-style-type: none"> - REVIEW_ID - CUSTOMER_ID - COUNTRY - REVIEW_DATE - REVIEW_TITLE - REVIEW_TEXT | <p>Columns (8)</p> <ul style="list-style-type: none"> z2 REVIEW_ID AA PRODUCT_ID z2 CUSTOMER_ID AA COUNTRY REVIEW_DATE AA REVIEW_TITLE AA REVIEW_TEXT z2 SENTIMENT |
| <p>91. After removing all columns only the following two columns should be available.</p> | <p>Columns (2)</p> <ul style="list-style-type: none"> AA PRODUCT_ID z2 SENTIMENT <p>> Filter</p> |

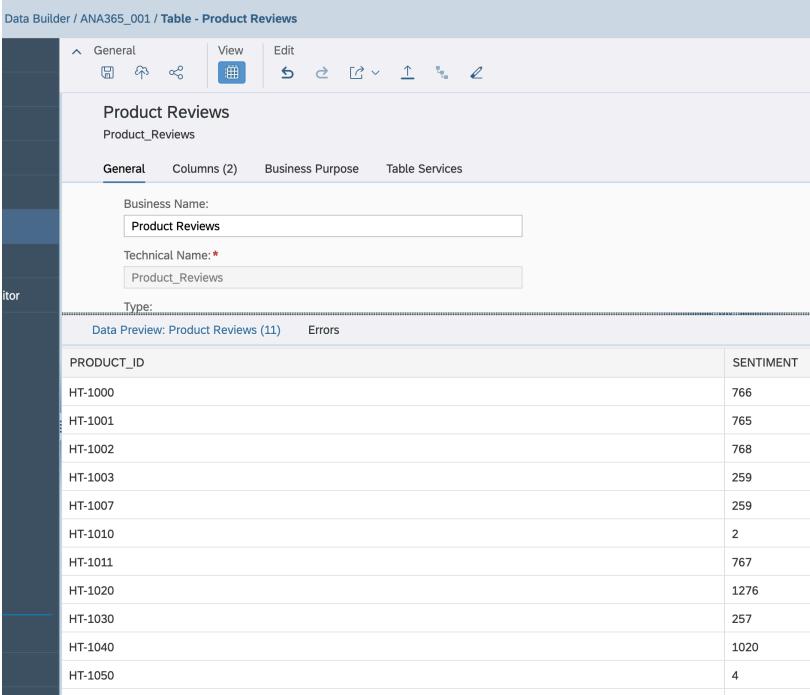
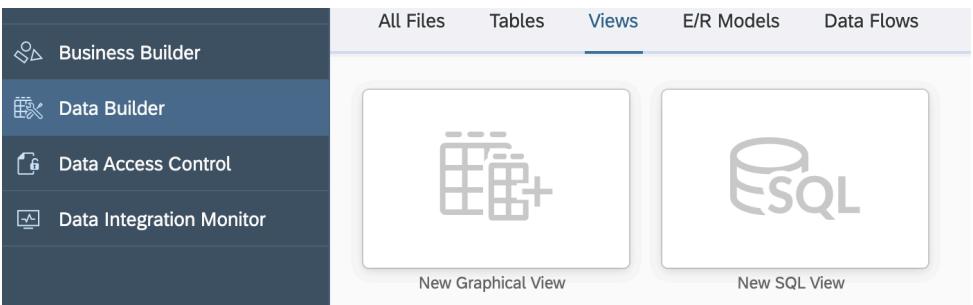
| Explanation | Screenshot |
|---|---|
| <p>92. Next, add an Aggregation node.</p> |  |
| <p>93. Select the node and from the Details pane on the right set the aggregation for the column SENTIMENT.</p> |  |
| <p>94. Select the Add Table operator or use the context menu from the added aggregation node to add the target table in which we will persist the data.</p> |  |

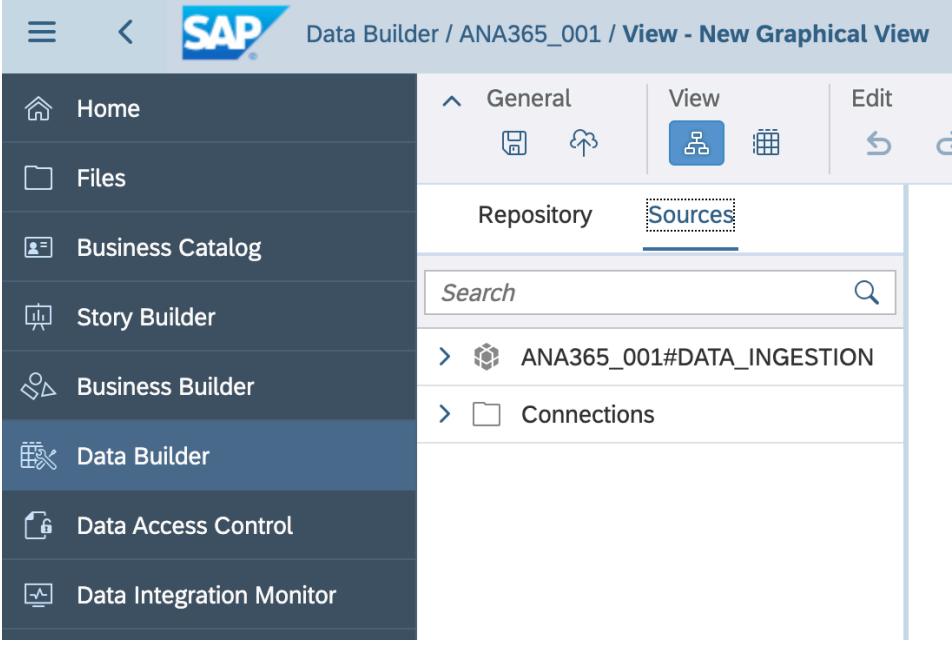
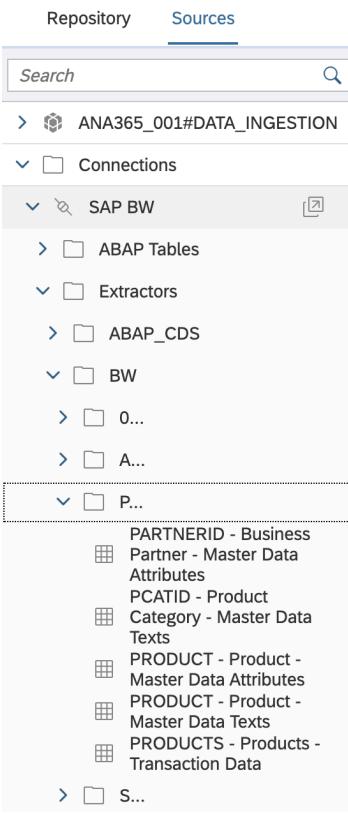
| Explanation | Screenshot |
|---|--|
| <p>95. Select the newly added node and define a label, business name and technical name for the target table.</p> |  |
| <p>96. Select the Create and Deploy Table button to create the table in the repository.</p> |  |
| <p>97. Confirm the dialog to create the table.</p> |  |

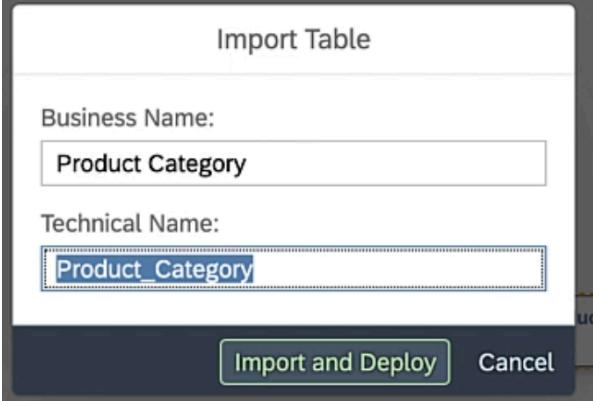
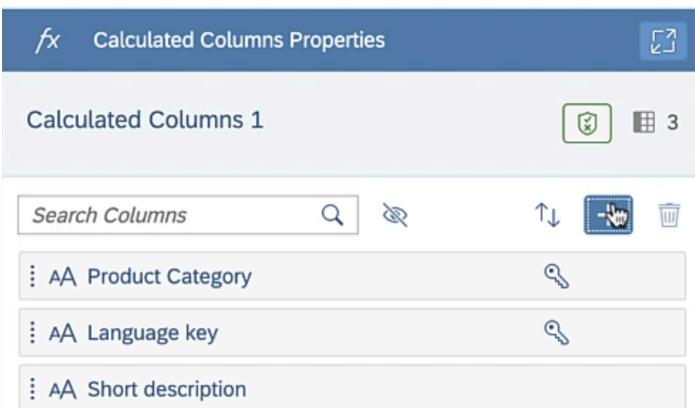
| Explanation | Screenshot |
|---|--|
| 98. Save the data flow. |  |
| 99. Provide a name for the data flow and hit Save. |  |
| 100. After saving the data flow execute it. |  |
| 101. Navigate to the data flow monitor by selecting the navigation icon from the left to navigate to the run details. |  |

| Explanation | Screenshot |
|---|--|
| 102. Hit the Refresh button until the data flow run completes. |  |
| 103. If you wanted to, you could also define a schedule to run the data flow repeatedly. This is however not needed for this session. 😊 You can define schedules by selecting the Schedule item from the left next to the Refresh icon. |  |
| 104. You can specify different options like recurrence, start and end date. |  |

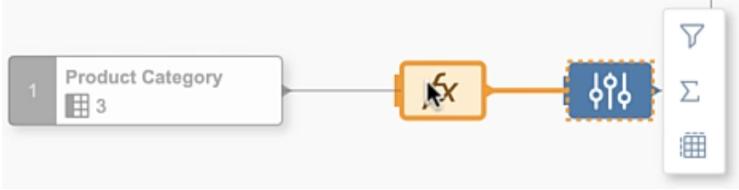
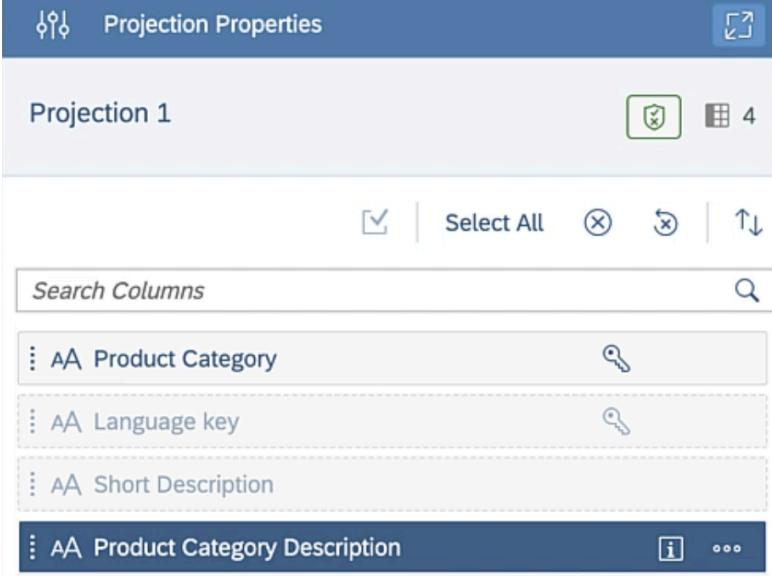
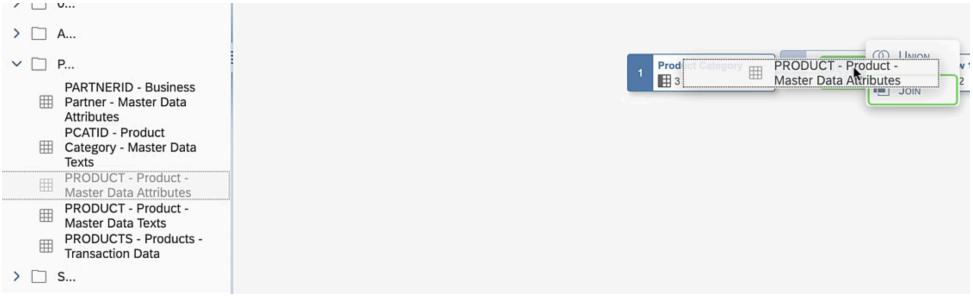
| Explanation | Screenshot | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|-------------------------------|------------------------|-----------------|-------------------|------------------------------|-----------------|-------------------|--------------------|-------------------------------|------------------------|--|--|------|----------|-------|--------|----------|------|---------|-------------------|--------|-------------------|--------|------|-------------------|------------------------------|-------------------|-----------|--|--|------|-------------------|-------------------|--|--|--|--|------|-------------------|------------------------------|--|--|--|--|------|-------------------|-------------------|--|--|--|--|------|-------------------|-------------------|--|--|--|--|------|-------------------|----------------------|
| 105. Make sure that your executed data flow executed completely. |  <table border="1" data-bbox="491 361 1470 720"> <thead> <tr> <th colspan="2">Load_Product_Reviews</th> <th colspan="4">Run Details</th> </tr> </thead> <tbody> <tr> <td>Status: Completed</td> <td>Duration: 00:02:04</td> <td>Start Date: Nov 9, 2020 14:41</td> <td>End: Nov 9, 2020 14:43</td> <td colspan="2"></td> </tr> <tr> <th>Runs</th> <th>Schedule</th> <th>Start</th> <th>Status</th> <th>Category</th> <th>When</th> <th>Message</th> </tr> <tr> <td>Nov 9, 2020 15:03</td> <td>Failed</td> <td>Nov 9, 2020 15:02</td> <td>Failed</td> <td>INFO</td> <td>Nov 9, 2020 14:42</td> <td>Started execution of ETL job</td> </tr> <tr> <td>Nov 9, 2020 14:41</td> <td>Completed</td> <td></td> <td></td> <td>INFO</td> <td>Nov 9, 2020 14:42</td> <td>ETL job completed</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>INFO</td> <td>Nov 9, 2020 14:42</td> <td>Started execution of ETL job</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>INFO</td> <td>Nov 9, 2020 14:43</td> <td>ETL job completed</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>INFO</td> <td>Nov 9, 2020 14:43</td> <td>ETL job completed</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>INFO</td> <td>Nov 9, 2020 14:43</td> <td>Data Flow Completed.</td> </tr> </tbody> </table> | Load_Product_Reviews | | Run Details | | | | Status: Completed | Duration: 00:02:04 | Start Date: Nov 9, 2020 14:41 | End: Nov 9, 2020 14:43 | | | Runs | Schedule | Start | Status | Category | When | Message | Nov 9, 2020 15:03 | Failed | Nov 9, 2020 15:02 | Failed | INFO | Nov 9, 2020 14:42 | Started execution of ETL job | Nov 9, 2020 14:41 | Completed | | | INFO | Nov 9, 2020 14:42 | ETL job completed | | | | | INFO | Nov 9, 2020 14:42 | Started execution of ETL job | | | | | INFO | Nov 9, 2020 14:43 | ETL job completed | | | | | INFO | Nov 9, 2020 14:43 | ETL job completed | | | | | INFO | Nov 9, 2020 14:43 | Data Flow Completed. |
| Load_Product_Reviews | | Run Details | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Status: Completed | Duration: 00:02:04 | Start Date: Nov 9, 2020 14:41 | End: Nov 9, 2020 14:43 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Runs | Schedule | Start | Status | Category | When | Message | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nov 9, 2020 15:03 | Failed | Nov 9, 2020 15:02 | Failed | INFO | Nov 9, 2020 14:42 | Started execution of ETL job | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nov 9, 2020 14:41 | Completed | | | INFO | Nov 9, 2020 14:42 | ETL job completed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | INFO | Nov 9, 2020 14:42 | Started execution of ETL job | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | INFO | Nov 9, 2020 14:43 | ETL job completed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | INFO | Nov 9, 2020 14:43 | ETL job completed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | INFO | Nov 9, 2020 14:43 | Data Flow Completed. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 106. Navigate to the Data Builder to check whether the table created during the data flow execution is filled correctly. |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 107. Select the Tables tab and select the Products Reviews table. |  <table border="1" data-bbox="491 1586 1111 1733"> <thead> <tr> <th>Business Name</th> <th>Technical Name</th> </tr> </thead> <tbody> <tr> <td>Product Reviews</td> <td>Product_Reviews</td> </tr> <tr> <td>SalesOrderItems</td> <td>SalesOrderItems</td> </tr> </tbody> </table> | Business Name | Technical Name | Product Reviews | Product_Reviews | SalesOrderItems | SalesOrderItems | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Business Name | Technical Name | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Product Reviews | Product_Reviews | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SalesOrderItems | SalesOrderItems | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

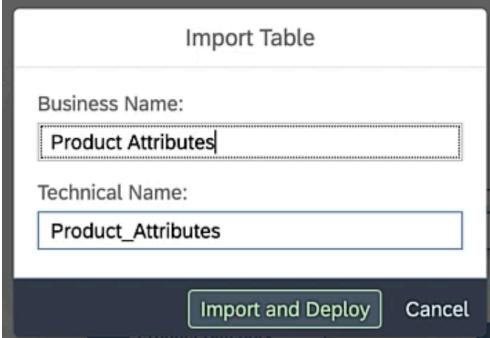
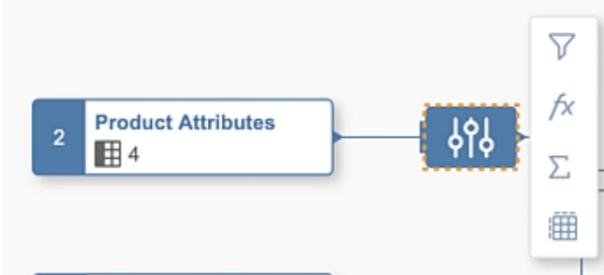
| Explanation | Screenshot | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|------------|-----------|---------|-----|---------|-----|---------|-----|---------|-----|---------|-----|---------|---|---------|-----|---------|------|---------|-----|---------|------|---------|---|
| 108. Open the Data Preview and make sure the different products are listed and the sentiment is shown. The aggregated sentiment might look a little different in your case from what is visible in this screenshot. |  <p>Data Preview: Product Reviews (11) Errors</p> <table border="1"> <thead> <tr> <th>PRODUCT_ID</th> <th>SENTIMENT</th> </tr> </thead> <tbody> <tr><td>HT-1000</td><td>766</td></tr> <tr><td>HT-1001</td><td>765</td></tr> <tr><td>HT-1002</td><td>768</td></tr> <tr><td>HT-1003</td><td>259</td></tr> <tr><td>HT-1007</td><td>259</td></tr> <tr><td>HT-1010</td><td>2</td></tr> <tr><td>HT-1011</td><td>767</td></tr> <tr><td>HT-1020</td><td>1276</td></tr> <tr><td>HT-1030</td><td>257</td></tr> <tr><td>HT-1040</td><td>1020</td></tr> <tr><td>HT-1050</td><td>4</td></tr> </tbody> </table> | PRODUCT_ID | SENTIMENT | HT-1000 | 766 | HT-1001 | 765 | HT-1002 | 768 | HT-1003 | 259 | HT-1007 | 259 | HT-1010 | 2 | HT-1011 | 767 | HT-1020 | 1276 | HT-1030 | 257 | HT-1040 | 1020 | HT-1050 | 4 |
| PRODUCT_ID | SENTIMENT | | | | | | | | | | | | | | | | | | | | | | | | |
| HT-1000 | 766 | | | | | | | | | | | | | | | | | | | | | | | | |
| HT-1001 | 765 | | | | | | | | | | | | | | | | | | | | | | | | |
| HT-1002 | 768 | | | | | | | | | | | | | | | | | | | | | | | | |
| HT-1003 | 259 | | | | | | | | | | | | | | | | | | | | | | | | |
| HT-1007 | 259 | | | | | | | | | | | | | | | | | | | | | | | | |
| HT-1010 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| HT-1011 | 767 | | | | | | | | | | | | | | | | | | | | | | | | |
| HT-1020 | 1276 | | | | | | | | | | | | | | | | | | | | | | | | |
| HT-1030 | 257 | | | | | | | | | | | | | | | | | | | | | | | | |
| HT-1040 | 1020 | | | | | | | | | | | | | | | | | | | | | | | | |
| HT-1050 | 4 | | | | | | | | | | | | | | | | | | | | | | | | |
| 109. Congratulations! | <p>You have successfully created and executed your first Data Flow instance in SAP Data Warehouse Cloud! You now know how to create ETL processes, schedule data loads using data flows and how to transform the incoming data.</p> <p>As a next step, let's take a look at how you can integrate data virtually from the connected SAP BW system to add the required product master data to our data model. We will now build a virtual master data dimension.</p> | | | | | | | | | | | | | | | | | | | | | | | | |
| 110. Navigate to the Views area in the Data Builder. |  <p>All Files Tables Views E/R Models Data Flows</p> <p>New Graphical View New SQL View</p> | | | | | | | | | | | | | | | | | | | | | | | | |

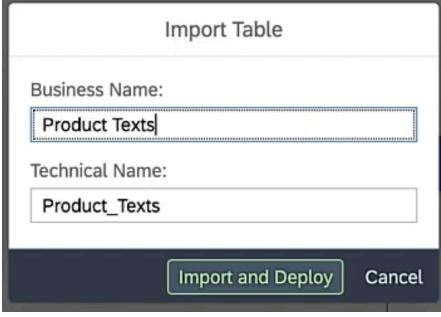
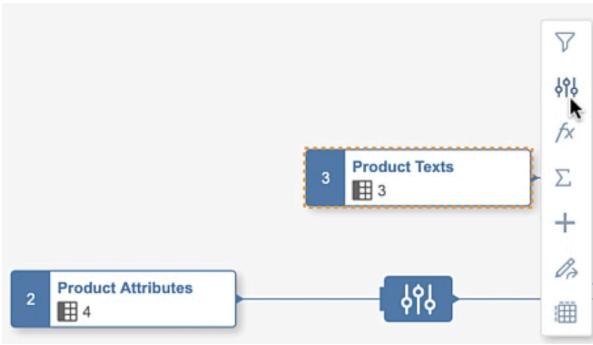
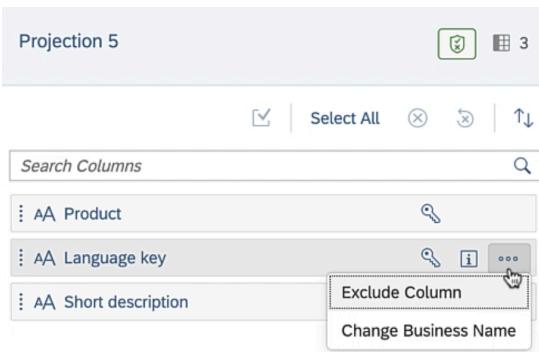
| Explanation | Screenshot |
|--|---|
| 111. Select the New Graphical View tile and select the Sources tab. |  |
| 112. Drill down into the SAP BW connection and navigate to SAP BW > Extractors > BW > P... |  |

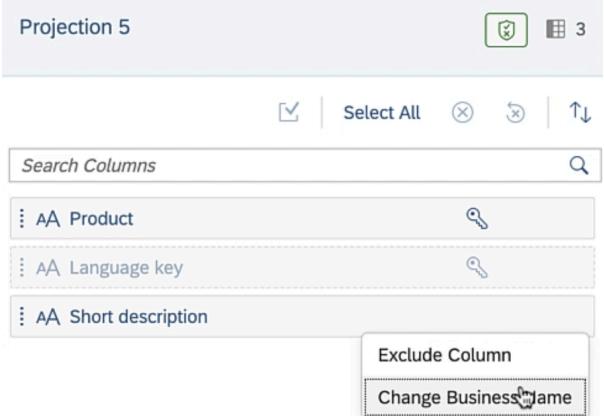
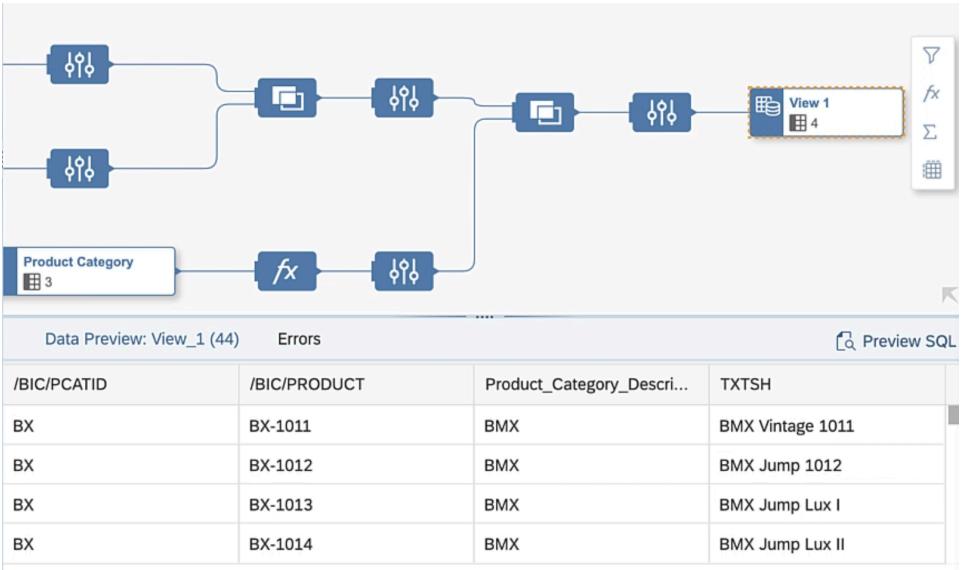
| Explanation | Screenshot |
|--|---|
| 113. Start off by dragging over the PCATID – Product Category – Master Data Texts. |  <p>It looks like Drag and drop y</p> |
| 114. Provide a meaningful Business Name and Technical Name. |  |
| 115. Add a calculation node. |  |
| 116. Add a new calculated column. |  |

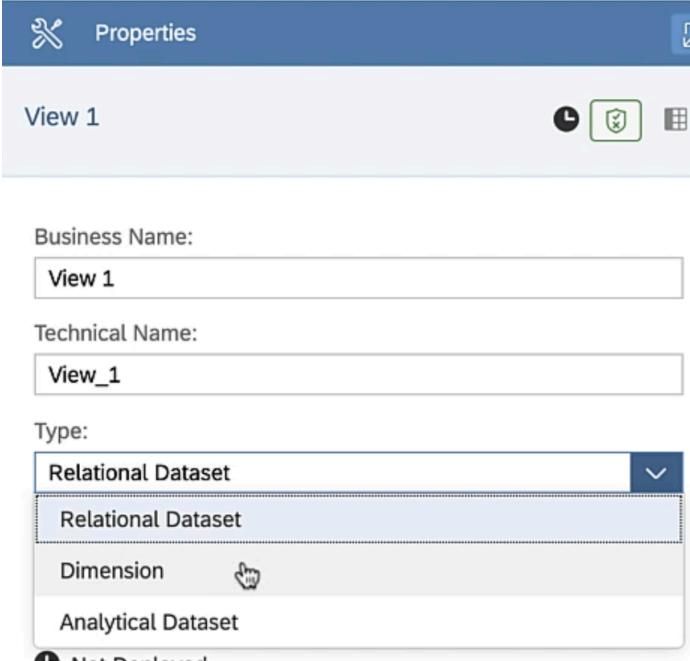
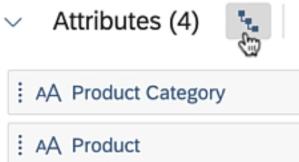
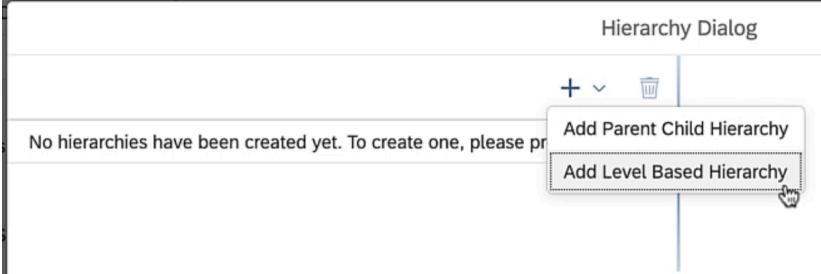
| Explanation | Screenshot |
|--|---|
| 117. Provide a meaningful Business Name and Technical Name and define the Data Type as String. | <p>Business Name:</p> <div style="border: 1px solid #ccc; padding: 5px; width: 100%;">Product Category Description</div> <p>Technical Name:</p> <div style="border: 1px solid #ccc; padding: 5px; width: 100%;">Product_Category_Description</div> <p>Data Type:</p> <div style="border: 1px solid #ccc; padding: 5px; width: 100%;">AA String</div> <p>Length:</p> <div style="border: 1px solid #ccc; padding: 5px; width: 100%;">10</div> |
| 118. Select the column TXTSH from the list of columns as the Expression. | <p>Expression Validate</p> <div style="border: 1px solid #ccc; padding: 5px; width: 100%; height: 100px;"> <input type="text" value="TXTSH"/> </div> <p>The expression of calculated column 'Product_Category_Description' is invalid.</p> <p style="text-align: center;"> Functions (140) Columns (4) Other </p> <p style="margin-top: 10px;"> Search 🔍 </p> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p style="margin-bottom: 0;">AA /BIC/PCATID</p> <p style="margin-top: 0;">Product Category</p> <hr/> <p style="margin-bottom: 0;">AA LANGU</p> <p style="margin-top: 0;">Language key</p> <hr/> <p style="margin-bottom: 0;">AA TXTSH</p> <p style="margin-top: 0;">Short description</p> </div> |
| 119. Hit the Validate button to make sure the expression is valid. | <p>Expression Validate</p> <div style="border: 1px solid #ccc; padding: 5px; width: 100%;"> <input type="text" value="TXTSH"/> </div> |

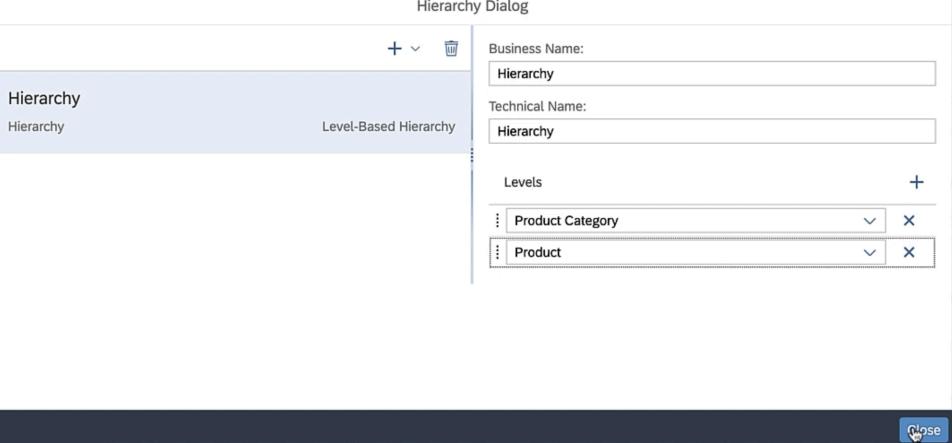
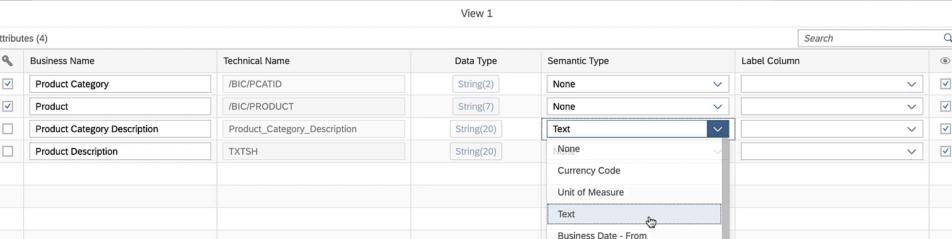
| Explanation | Screenshot |
|--|--|
| 120. Add a projection node after the calculation node. |  |
| 121. Make sure to exclude the column Short Description and Language key. |  |
| 122. Next, drag over the PRODUCT – Product – Master Data Attributes from the Sources tree and put it onto the projection node. Make sure that the option Join is selected when dropping the table! |  |

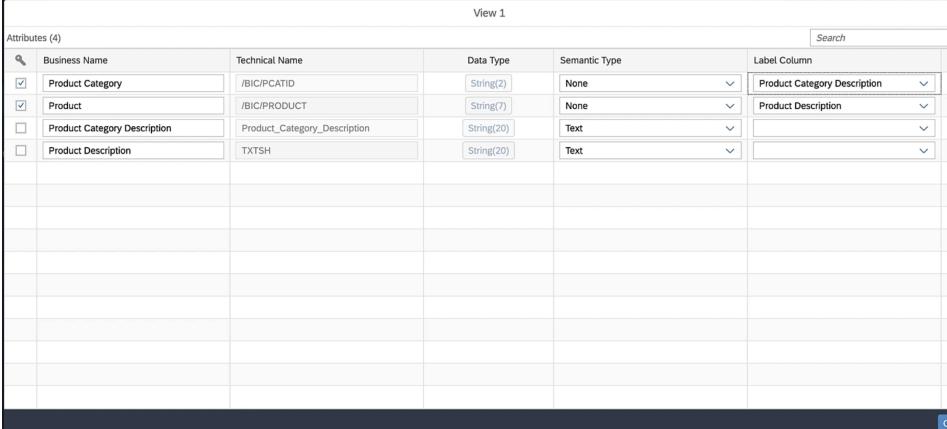
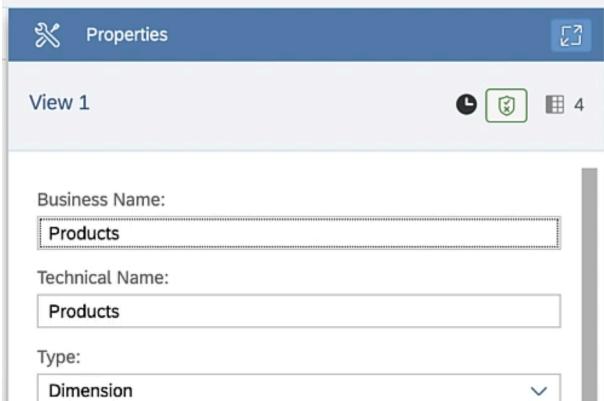
| Explanation | Screenshot |
|---|---|
| 123. Again, provide a meaningful Business Name and Technical Name. |  <p>Import Table</p> <p>Business Name: Product Attributes</p> <p>Technical Name: Product_Attributes</p> <p>Import and Deploy Cancel</p> |
| 124. Make sure that the Join mapping is defined correctly. | <p>Mappings</p> <p>Show: All Mapped Unmapped</p> <p>Projection 1 (2) product-reviews (4)</p> <p>Search Co... ↑ Search Co... ↑</p> <p>⋮ AA Product Category ⋮ AA Product</p> <p>⋮ AA Product Category Description ⋮ AA Product Category</p> <p>⋮ AA Currency</p> <p>⋮ 1:23 Price</p> |
| 125. Add a projection node after the Product Attributes. |  <p>2 Product Attributes 4</p> |
| 126. Exclude the columns Currency and Price. We don't need these columns because the Sales Order data sets already contain these information. | <p>Select All <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> ↑</p> <p>Search Columns</p> <p>⋮ AA Product</p> <p>⋮ AA Product Category</p> <p>⋮ AA Currency</p> <p>⋮ 1:23 Price</p> |

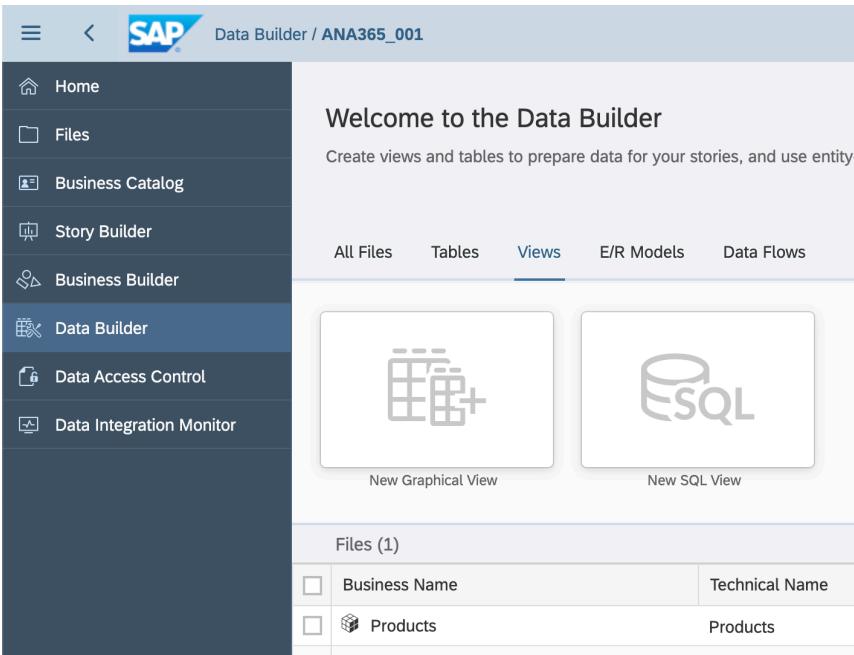
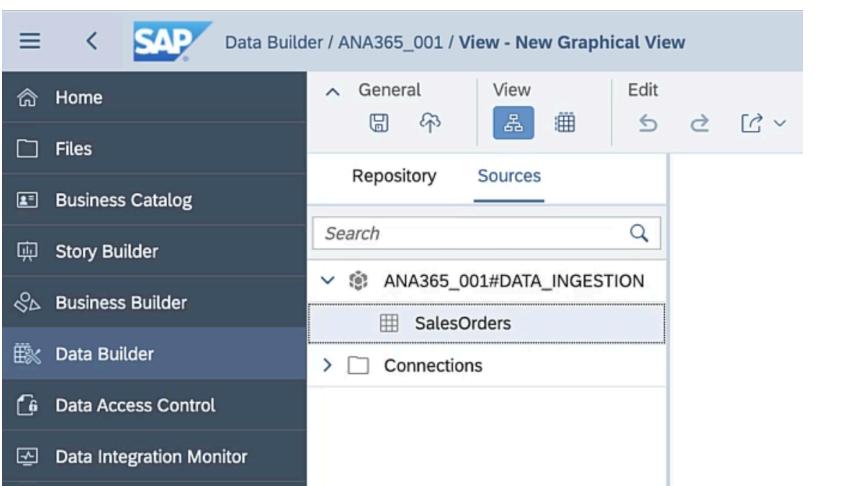
| Explanation | Screenshot |
|---|---|
| 127. Next, drag over the PRODUCT – Product – Master Data Texts and drop it on the projection node you created after the Product Attributes table. |  <p>The screenshot shows a data flow diagram. A projection node (represented by a blue rectangle with a circular icon) is connected to a table node (represented by a blue rectangle with a grid icon). A context menu is open over the projection node, listing various table options. One of the options, 'PRODUCT - Product - Master Data Texts', is highlighted with a green selection bar.</p> |
| 128. Provide a meaningful Business Name and Technical Name. |  <p>The screenshot shows the 'Import Table' dialog box. It contains two input fields: 'Business Name:' with the value 'Product Texts' and 'Technical Name:' with the value 'Product_Texts'. At the bottom are two buttons: 'Import and Deploy' and 'Cancel'.</p> |
| 129. Add a projection node after the Product Texts node. |  <p>The screenshot shows a data flow diagram. A projection node (blue rectangle with circular icon) is positioned above a table node (blue rectangle with grid icon). The table node is connected to a projection node below it. To the right of the projection node is a toolbar with various icons, including a magnifying glass, a plus sign, and a minus sign.</p> |
| 130. Exclude the Language key column. |  <p>The screenshot shows the 'Projection 5' configuration dialog. It lists three columns: 'AA Product', 'AA Language key', and 'AA Short description'. The 'AA Language key' row has a context menu open with an option 'Exclude Column' highlighted. Other options in the menu include 'Change Business Name' and a 'More...' button.</p> |

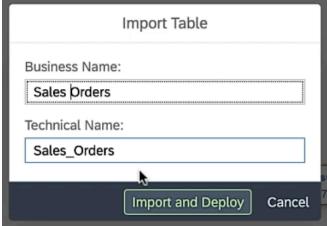
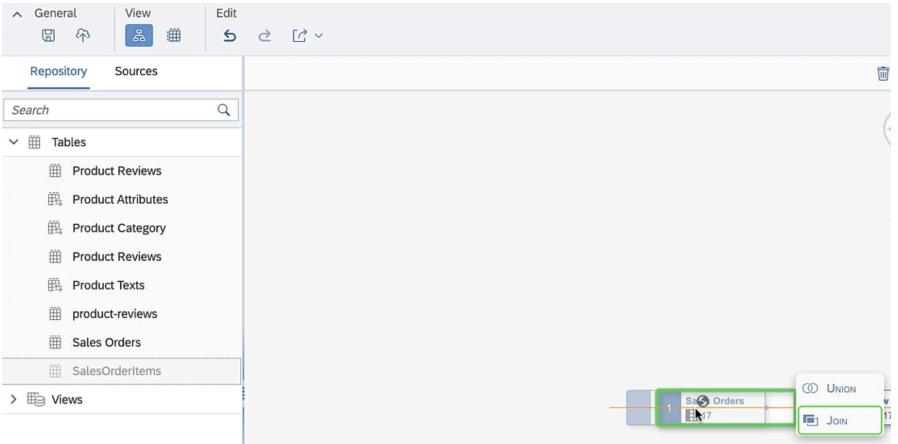
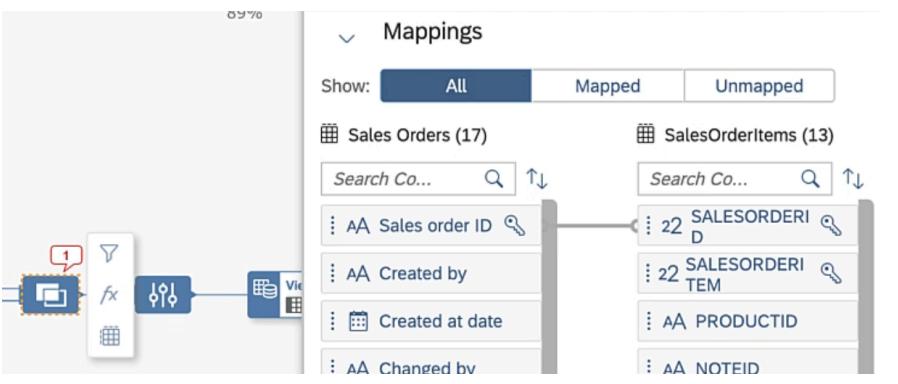
| Explanation | Screenshot | | | | | | | | | | | | | | | | | | | | |
|--|--|----------------------------|------------------|----------------------------|-------|----|---------|-----|------------------|----|---------|-----|---------------|----|---------|-----|----------------|----|---------|-----|-----------------|
| 131.Change the Business Name of the Short description column. |  <p>The screenshot shows the 'Projection 5' configuration screen. In the bottom right corner, there is a button labeled 'Change Business Name'. This button is highlighted with a red box, indicating it is the current task.</p> | | | | | | | | | | | | | | | | | | | | |
| 132.Provide a meaningful name like Product Description. |  <p>The screenshot shows the 'Search Columns' screen. A column named 'Product Description' is selected and highlighted with a red box. Below the list, a message box displays the warning: 'The business name for columns must be unique.'</p> | | | | | | | | | | | | | | | | | | | | |
| 133.Select the View 1 output node and open the data preview. Make sure that the data is displayed. |  <p>The screenshot shows a data flow diagram and its corresponding data preview. The data flow consists of several nodes: an input node, a transformation node, another transformation node, a third transformation node, and finally a 'View 1' output node. The 'View 1' node is highlighted with a red box. Below the diagram, the 'Data Preview: View_1 (44)' table is shown:</p> <table border="1"> <thead> <tr> <th>/BIC/PCATID</th> <th>/BIC/PRODUCT</th> <th>Product_Category_Descri...</th> <th>TXTSH</th> </tr> </thead> <tbody> <tr> <td>BX</td> <td>BX-1011</td> <td>BMX</td> <td>BMX Vintage 1011</td> </tr> <tr> <td>BX</td> <td>BX-1012</td> <td>BMX</td> <td>BMX Jump 1012</td> </tr> <tr> <td>BX</td> <td>BX-1013</td> <td>BMX</td> <td>BMX Jump Lux I</td> </tr> <tr> <td>BX</td> <td>BX-1014</td> <td>BMX</td> <td>BMX Jump Lux II</td> </tr> </tbody> </table> | /BIC/PCATID | /BIC/PRODUCT | Product_Category_Descri... | TXTSH | BX | BX-1011 | BMX | BMX Vintage 1011 | BX | BX-1012 | BMX | BMX Jump 1012 | BX | BX-1013 | BMX | BMX Jump Lux I | BX | BX-1014 | BMX | BMX Jump Lux II |
| /BIC/PCATID | /BIC/PRODUCT | Product_Category_Descri... | TXTSH | | | | | | | | | | | | | | | | | | |
| BX | BX-1011 | BMX | BMX Vintage 1011 | | | | | | | | | | | | | | | | | | |
| BX | BX-1012 | BMX | BMX Jump 1012 | | | | | | | | | | | | | | | | | | |
| BX | BX-1013 | BMX | BMX Jump Lux I | | | | | | | | | | | | | | | | | | |
| BX | BX-1014 | BMX | BMX Jump Lux II | | | | | | | | | | | | | | | | | | |

| Explanation | Screenshot |
|--|---|
| <p>134. In the Properties pane change the Type from Relational Dataset to Dimension.</p> |  <p>Business Name: View 1</p> <p>Technical Name: View_1</p> <p>Type:</p> <ul style="list-style-type: none"> Relational Dataset Dimension Analytical Dataset <p>Not Deployed</p> |
| <p>135. In the Attributes section select the hierarchy icon.</p> |  <p>Attributes (4)</p> <ul style="list-style-type: none"> AA Product Category AA Product |
| <p>136. In the dialog add a new level-based hierarchy.</p> |  <p>Hierarchy Dialog</p> <p>No hierarchies have been created yet. To create one, please pr</p> <ul style="list-style-type: none"> + Add Parent Child Hierarchy Add Level Based Hierarchy |

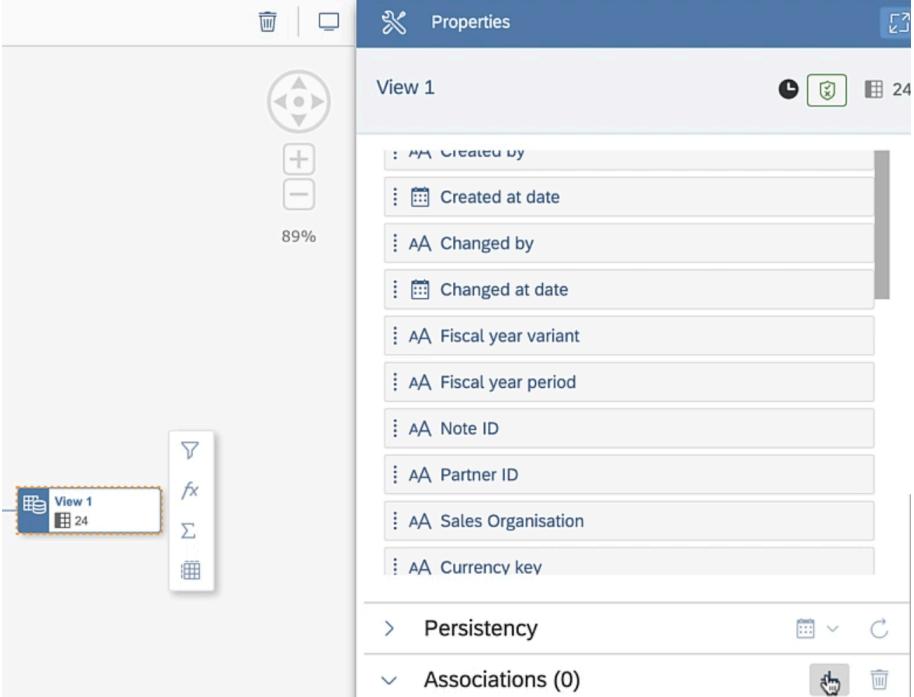
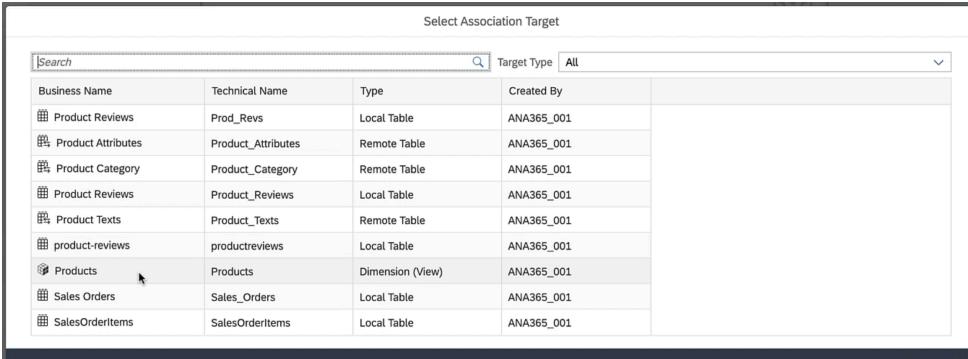
| Explanation | Screenshot | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|---------------|----------------|--------------|---------------|--------------|------------------|-------------|-----------|------|--|---------|--------------|-----------|------|--|------------------------------|------------------------------|------------|------|--|---------------------|-------|------------|------|--|
| 137. Add two levels and specify the first level as Product Category and the second level as Product. |  <p>The screenshot shows the 'Levels' dialog. It contains two entries: 'Product Category' and 'Product'. Below these entries are three descriptive labels: 'Product Category Description', 'Product Description', and 'Product Category Description' again.</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| 138. Confirm the dialog to create the hierarchy. |  <p>The screenshot shows the 'Hierarchy Dialog'. It includes fields for 'Business Name' (Hierarchy) and 'Technical Name' (Hierarchy). Below these are sections for 'Levels' and 'Attributes'. The 'Levels' section contains 'Product Category' and 'Product'. At the bottom right is a 'Close' button.</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| 139. Select the edit icon in the Attributes section. |  <p>The screenshot shows the 'Attributes' section with four items: 'AA Product Category', 'AA Product', 'AA Product Category Description', and 'AA Product Description'. Each item has an edit icon (pencil icon) next to it.</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| 140. In the dialog change the Semantic Type for the columns Product Category Description and Product Description to Text. |  <p>The screenshot shows the 'Attributes' dialog with four rows. The 'Semantic Type' column for 'Product Category Description' and 'Product Description' is set to 'Text'. Other columns include 'Business Name', 'Technical Name', 'Data Type', and 'Label Column'.</p> <table border="1"> <thead> <tr> <th>Business Name</th> <th>Technical Name</th> <th>Data Type</th> <th>Semantic Type</th> <th>Label Column</th> </tr> </thead> <tbody> <tr> <td>Product Category</td> <td>/BIC/PCATID</td> <td>String(2)</td> <td>None</td> <td></td> </tr> <tr> <td>Product</td> <td>/BIC/PRODUCT</td> <td>String(7)</td> <td>None</td> <td></td> </tr> <tr> <td>Product Category Description</td> <td>Product_Category_Description</td> <td>String(20)</td> <td>Text</td> <td></td> </tr> <tr> <td>Product Description</td> <td>TXTSH</td> <td>String(20)</td> <td>Text</td> <td></td> </tr> </tbody> </table> | Business Name | Technical Name | Data Type | Semantic Type | Label Column | Product Category | /BIC/PCATID | String(2) | None | | Product | /BIC/PRODUCT | String(7) | None | | Product Category Description | Product_Category_Description | String(20) | Text | | Product Description | TXTSH | String(20) | Text | |
| Business Name | Technical Name | Data Type | Semantic Type | Label Column | | | | | | | | | | | | | | | | | | | | | | |
| Product Category | /BIC/PCATID | String(2) | None | | | | | | | | | | | | | | | | | | | | | | | |
| Product | /BIC/PRODUCT | String(7) | None | | | | | | | | | | | | | | | | | | | | | | | |
| Product Category Description | Product_Category_Description | String(20) | Text | | | | | | | | | | | | | | | | | | | | | | | |
| Product Description | TXTSH | String(20) | Text | | | | | | | | | | | | | | | | | | | | | | | |

| Explanation | Screenshot | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|---------------|----------------|------------------------------|------------------------------|--------------|---------------------|-------------|-----------|------|------------------------------|---------|--------------|-----------|------|---------------------|------------------------------|------------------------------|------------|------|--|---------------------|-------|------------|------|--|
| 141.Change the Label Column values for the first row to Product Category Description and for the second row to Product Description. |  <table border="1"> <thead> <tr> <th>Semantic Type</th> <th>Label Column</th> </tr> </thead> <tbody> <tr> <td>None</td> <td>Product Category Description</td> </tr> <tr> <td>None</td> <td>Product Description</td> </tr> <tr> <td>Text</td> <td></td> </tr> <tr> <td>Text</td> <td></td> </tr> </tbody> </table> | Semantic Type | Label Column | None | Product Category Description | None | Product Description | Text | | Text | | | | | | | | | | | | | | | | |
| Semantic Type | Label Column | | | | | | | | | | | | | | | | | | | | | | | | | |
| None | Product Category Description | | | | | | | | | | | | | | | | | | | | | | | | | |
| None | Product Description | | | | | | | | | | | | | | | | | | | | | | | | | |
| Text | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Text | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 142.Confirm the dialog. |  <table border="1"> <thead> <tr> <th>Business Name</th> <th>Technical Name</th> <th>Data Type</th> <th>Semantic Type</th> <th>Label Column</th> </tr> </thead> <tbody> <tr> <td>Product Category</td> <td>/BIC/PCATID</td> <td>String(2)</td> <td>None</td> <td>Product Category Description</td> </tr> <tr> <td>Product</td> <td>/BIC/PRODUCT</td> <td>String(7)</td> <td>None</td> <td>Product Description</td> </tr> <tr> <td>Product Category Description</td> <td>Product_Category_Description</td> <td>String(20)</td> <td>Text</td> <td></td> </tr> <tr> <td>Product Description</td> <td>TXTSH</td> <td>String(20)</td> <td>Text</td> <td></td> </tr> </tbody> </table> | Business Name | Technical Name | Data Type | Semantic Type | Label Column | Product Category | /BIC/PCATID | String(2) | None | Product Category Description | Product | /BIC/PRODUCT | String(7) | None | Product Description | Product Category Description | Product_Category_Description | String(20) | Text | | Product Description | TXTSH | String(20) | Text | |
| Business Name | Technical Name | Data Type | Semantic Type | Label Column | | | | | | | | | | | | | | | | | | | | | | |
| Product Category | /BIC/PCATID | String(2) | None | Product Category Description | | | | | | | | | | | | | | | | | | | | | | |
| Product | /BIC/PRODUCT | String(7) | None | Product Description | | | | | | | | | | | | | | | | | | | | | | |
| Product Category Description | Product_Category_Description | String(20) | Text | | | | | | | | | | | | | | | | | | | | | | | |
| Product Description | TXTSH | String(20) | Text | | | | | | | | | | | | | | | | | | | | | | | |
| 143.Change the Business Name and Technical Name of the view to Products. |  <div data-bbox="502 1163 1106 1564"> <p>Properties</p> <p>View 1</p> <p>Business Name: Products</p> <p>Technical Name: Products</p> <p>Type: Dimension</p> </div> | | | | | | | | | | | | | | | | | | | | | | | | | |
| 144.Save and deploy the view. |  | | | | | | | | | | | | | | | | | | | | | | | | | |

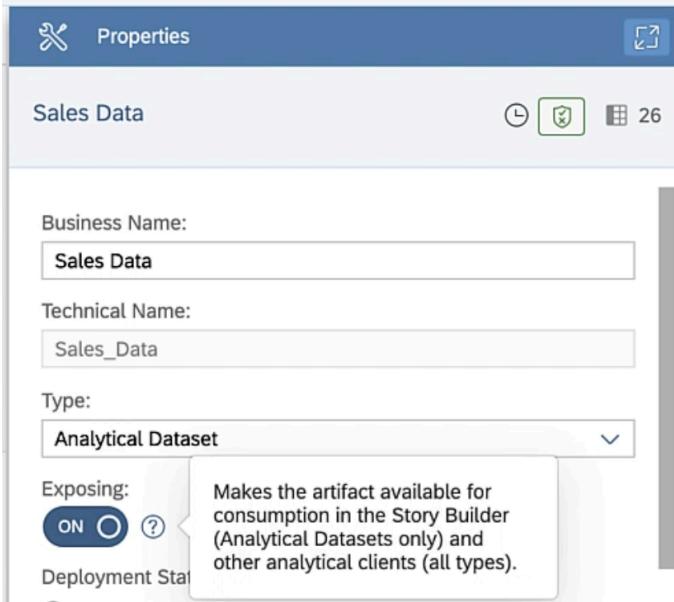
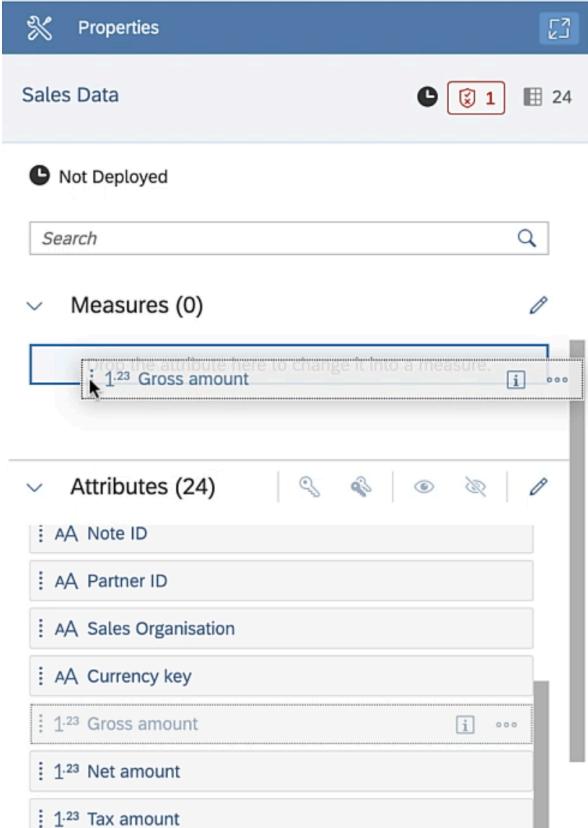
| Explanation | Screenshot |
|--|---|
| 145.Congratulations! | <p>You created your first master data dimension in SAP Data Warehouse Cloud! By now the dimension is all virtual. The data we put together in the dimension is fetched live from the connected SAP BW system whenever we query the data model, be it the data preview or when used later in a SAP Analytics Cloud story.</p> <p>Next, we create our final data model combining all the different data assets in a single model.</p> |
| 146.Navigate to the Data Builder and create a new Graphical View. |  |
| 147.We start with the Sales Order and Sales Order Items we created in the Open SQL Schema using the Database User. Switch to the Sources tab and drill down into the Open SQL Schema connection. Select the SalesOrders table and drag into onto the canvas. |  |

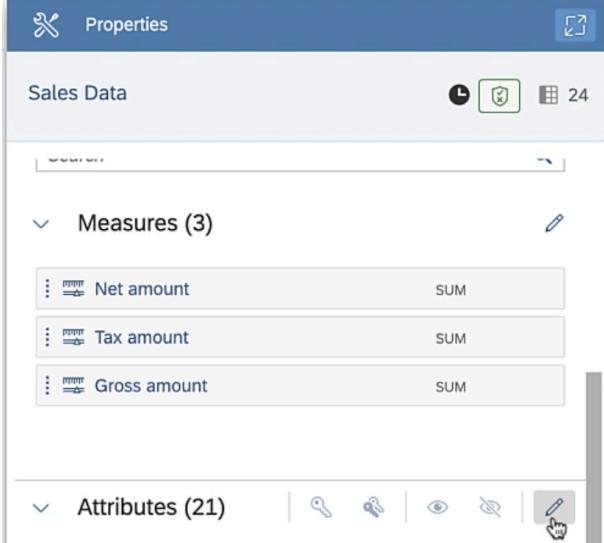
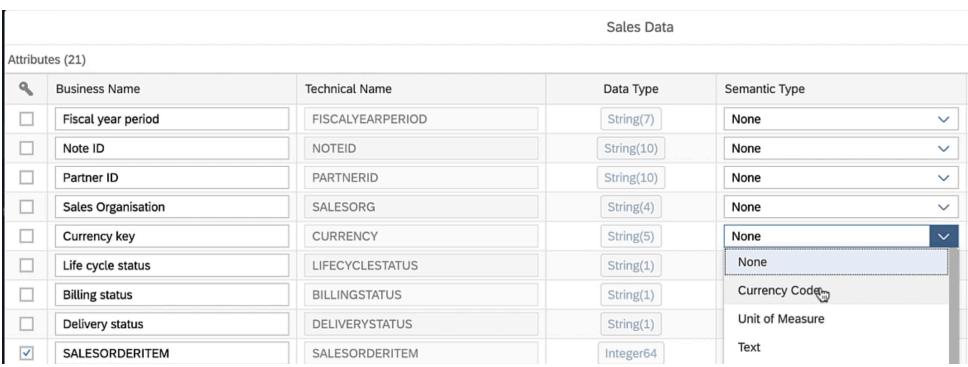
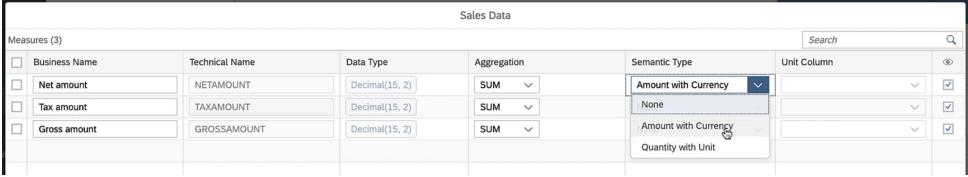
| Explanation | Screenshot |
|---|--|
| 148. Provide a meaningful Business Name and Technical Name. |  |
| 149. Select the Repository tab and select the SalesOrderItems table. Drag it onto the Sales Orders table and make sure the Join option is selected. |  |
| 150. Select the Join node and make sure the field mapping is correctly defined (Sales order ID -> SALESORDERID). |  |

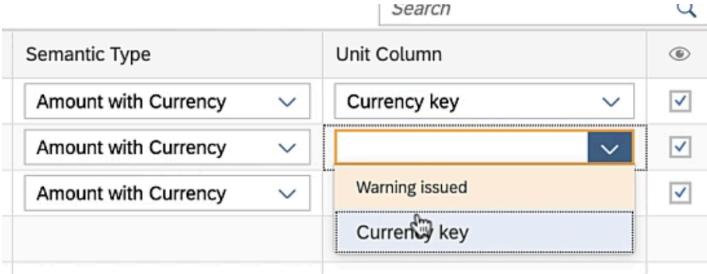
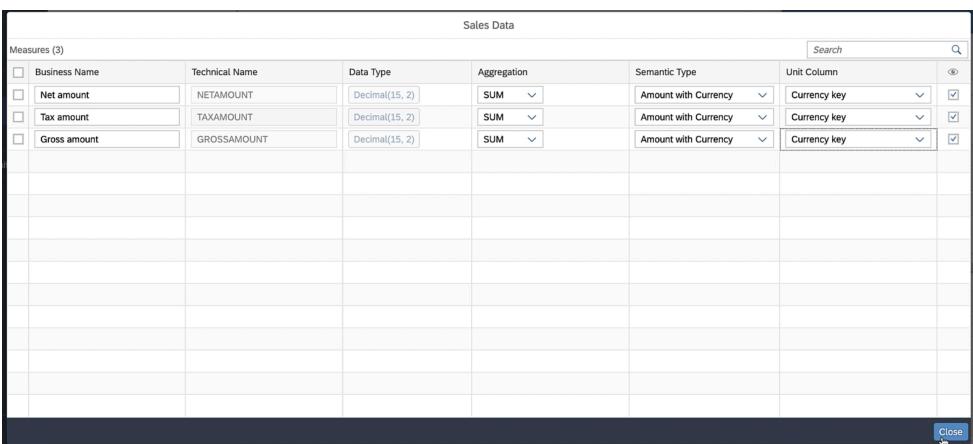
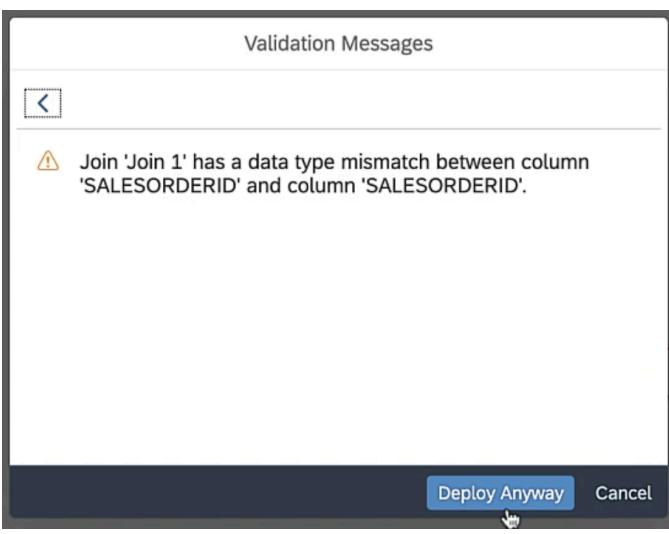
| Explanation | Screenshot | | | | | | | | | | | | | | | | | | | | | | |
|---|---|--------------|--------------|----------------------|-------------------|----------------------|--------------|----------------------|-----------|----------------------|-------------|----------------------|----------------|----------------------|---------------|----------------------|---------------|----------------------|---------------|---------------------|---------------|---------------------|--------------|
| <p>151. Switch to the Repository tab and select the Product Reviews table from the list of Tables. Drag it onto the canvas and drop it onto the Sales Order Items node.</p> | | | | | | | | | | | | | | | | | | | | | | | |
| <p>152. Select the join node and make sure that the join field mapping is correct (PRODUCTID -> PRODUCT_ID)</p> | <table border="1"> <caption>Mappings</caption> <thead> <tr> <th>Source Table</th> <th>Target Field</th> </tr> </thead> <tbody> <tr> <td>SalesOrderItems (13)</td> <td>22 SALESORDERITEM</td> </tr> <tr> <td>SalesOrderItems (13)</td> <td>AA PRODUCTID</td> </tr> <tr> <td>SalesOrderItems (13)</td> <td>AA NOTEID</td> </tr> <tr> <td>SalesOrderItems (13)</td> <td>AA CURRENCY</td> </tr> <tr> <td>SalesOrderItems (13)</td> <td>22 GROSSAMOUNT</td> </tr> <tr> <td>SalesOrderItems (13)</td> <td>123 NETAMOUNT</td> </tr> <tr> <td>SalesOrderItems (13)</td> <td>123 TAXAMOUNT</td> </tr> <tr> <td>SalesOrderItems (13)</td> <td>AA ITEMSTATUS</td> </tr> <tr> <td>Product Reviews (2)</td> <td>AA PRODUCT_ID</td> </tr> <tr> <td>Product Reviews (2)</td> <td>22 Sentiment</td> </tr> </tbody> </table> | Source Table | Target Field | SalesOrderItems (13) | 22 SALESORDERITEM | SalesOrderItems (13) | AA PRODUCTID | SalesOrderItems (13) | AA NOTEID | SalesOrderItems (13) | AA CURRENCY | SalesOrderItems (13) | 22 GROSSAMOUNT | SalesOrderItems (13) | 123 NETAMOUNT | SalesOrderItems (13) | 123 TAXAMOUNT | SalesOrderItems (13) | AA ITEMSTATUS | Product Reviews (2) | AA PRODUCT_ID | Product Reviews (2) | 22 Sentiment |
| Source Table | Target Field | | | | | | | | | | | | | | | | | | | | | | |
| SalesOrderItems (13) | 22 SALESORDERITEM | | | | | | | | | | | | | | | | | | | | | | |
| SalesOrderItems (13) | AA PRODUCTID | | | | | | | | | | | | | | | | | | | | | | |
| SalesOrderItems (13) | AA NOTEID | | | | | | | | | | | | | | | | | | | | | | |
| SalesOrderItems (13) | AA CURRENCY | | | | | | | | | | | | | | | | | | | | | | |
| SalesOrderItems (13) | 22 GROSSAMOUNT | | | | | | | | | | | | | | | | | | | | | | |
| SalesOrderItems (13) | 123 NETAMOUNT | | | | | | | | | | | | | | | | | | | | | | |
| SalesOrderItems (13) | 123 TAXAMOUNT | | | | | | | | | | | | | | | | | | | | | | |
| SalesOrderItems (13) | AA ITEMSTATUS | | | | | | | | | | | | | | | | | | | | | | |
| Product Reviews (2) | AA PRODUCT_ID | | | | | | | | | | | | | | | | | | | | | | |
| Product Reviews (2) | 22 Sentiment | | | | | | | | | | | | | | | | | | | | | | |

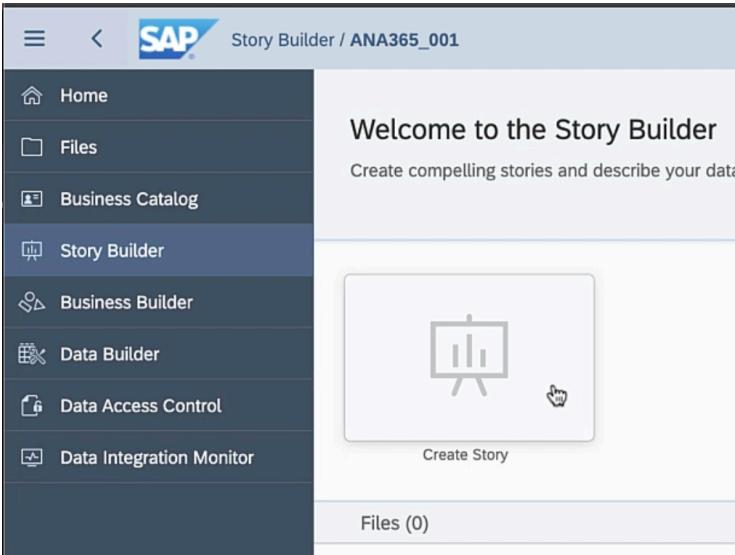
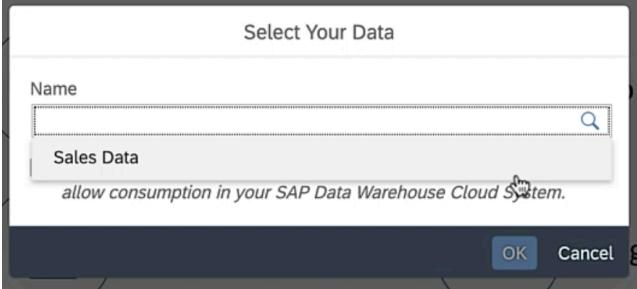
| Explanation | Screenshot | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---------------------------|------------|--|--|--------|-------------|-----|--|---------------|----------------|------|------------|-----------------|-----------|-------------|------------|--------------------|--------------------|--------------|------------|------------------|------------------|--------------|------------|-----------------|-----------------|-------------|------------|---------------|---------------|--------------|------------|-----------------|----------------|-------------|------------|----------|----------|------------------|------------|--------------|--------------|-------------|------------|-----------------|-----------------|-------------|------------|
| 153. Select the View 1 output node and scroll down to the Associations section. Hit the Add button to add a new association. |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 154. From the list of dimensions select the Products view and hit OK. |  <table border="1" data-bbox="523 1142 1454 1438"> <thead> <tr> <th colspan="4">Select Association Target</th> </tr> <tr> <th>Search</th> <th>Target Type</th> <th>All</th> <th></th> </tr> </thead> <tbody> <tr> <td>Business Name</td> <td>Technical Name</td> <td>Type</td> <td>Created By</td> </tr> <tr> <td>Product Reviews</td> <td>Prod_Revs</td> <td>Local Table</td> <td>ANA365_001</td> </tr> <tr> <td>Product Attributes</td> <td>Product_Attributes</td> <td>Remote Table</td> <td>ANA365_001</td> </tr> <tr> <td>Product Category</td> <td>Product_Category</td> <td>Remote Table</td> <td>ANA365_001</td> </tr> <tr> <td>Product Reviews</td> <td>Product_Reviews</td> <td>Local Table</td> <td>ANA365_001</td> </tr> <tr> <td>Product Texts</td> <td>Product_Texts</td> <td>Remote Table</td> <td>ANA365_001</td> </tr> <tr> <td>product-reviews</td> <td>productreviews</td> <td>Local Table</td> <td>ANA365_001</td> </tr> <tr> <td>Products</td> <td>Products</td> <td>Dimension (View)</td> <td>ANA365_001</td> </tr> <tr> <td>Sales Orders</td> <td>Sales_Orders</td> <td>Local Table</td> <td>ANA365_001</td> </tr> <tr> <td>SalesOrderItems</td> <td>SalesOrderItems</td> <td>Local Table</td> <td>ANA365_001</td> </tr> </tbody> </table> | Select Association Target | | | | Search | Target Type | All | | Business Name | Technical Name | Type | Created By | Product Reviews | Prod_Revs | Local Table | ANA365_001 | Product Attributes | Product_Attributes | Remote Table | ANA365_001 | Product Category | Product_Category | Remote Table | ANA365_001 | Product Reviews | Product_Reviews | Local Table | ANA365_001 | Product Texts | Product_Texts | Remote Table | ANA365_001 | product-reviews | productreviews | Local Table | ANA365_001 | Products | Products | Dimension (View) | ANA365_001 | Sales Orders | Sales_Orders | Local Table | ANA365_001 | SalesOrderItems | SalesOrderItems | Local Table | ANA365_001 |
| Select Association Target | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Search | Target Type | All | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Business Name | Technical Name | Type | Created By | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Product Reviews | Prod_Revs | Local Table | ANA365_001 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Product Attributes | Product_Attributes | Remote Table | ANA365_001 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Product Category | Product_Category | Remote Table | ANA365_001 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Product Reviews | Product_Reviews | Local Table | ANA365_001 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Product Texts | Product_Texts | Remote Table | ANA365_001 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| product-reviews | productreviews | Local Table | ANA365_001 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Products | Products | Dimension (View) | ANA365_001 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sales Orders | Sales_Orders | Local Table | ANA365_001 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SalesOrderItems | SalesOrderItems | Local Table | ANA365_001 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

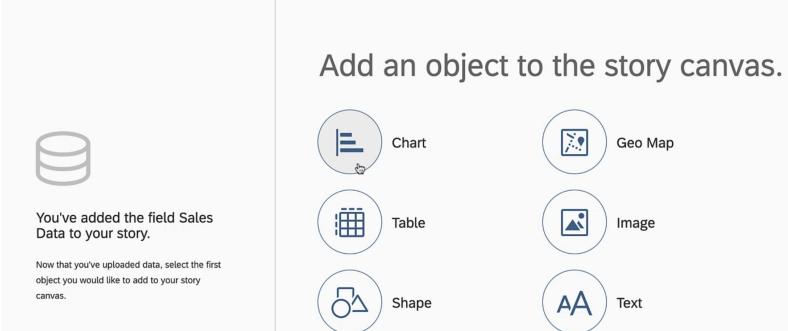
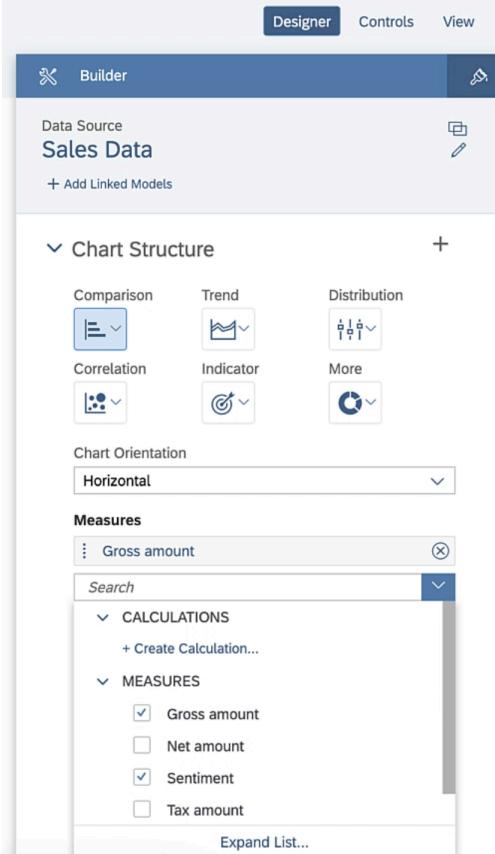
| Explanation | Screenshot |
|--|--|
| <p>155. In the details on the added association make sure that the join fields are defined correctly (PRODUCTID -> Product).</p> | <p>The screenshot shows the 'Properties' screen for a view named 'View 1 to Products'. Under the 'Join' section, there are two lists: 'View 1 (24)' on the left and 'Products (4)' on the right. The 'View 1 (24)' list contains fields like Net amount, Tax amount, Life cycle status, Billing status, Delivery status, SALESORD..., and PRODUCTID. The 'Products (4)' list contains fields like Product Category, Product, Product Category D..., and Product Description. A grey arrow points from the 'AA_PRODUCTID' field in the 'View 1 (24)' list to the 'AA_Product' field in the 'Products (4)' list, indicating a join relationship.</p> |
| <p>156. Navigate back to the main Properties screen of the View 1 output node by clicking on the View 1 bread crumb navigation at the top.</p> | <p>The screenshot shows the 'Properties' screen for the same view. The breadcrumb navigation at the top shows 'View 1 / View 1 to Products'. The 'General' section is currently selected, displaying basic properties for the view.</p> |

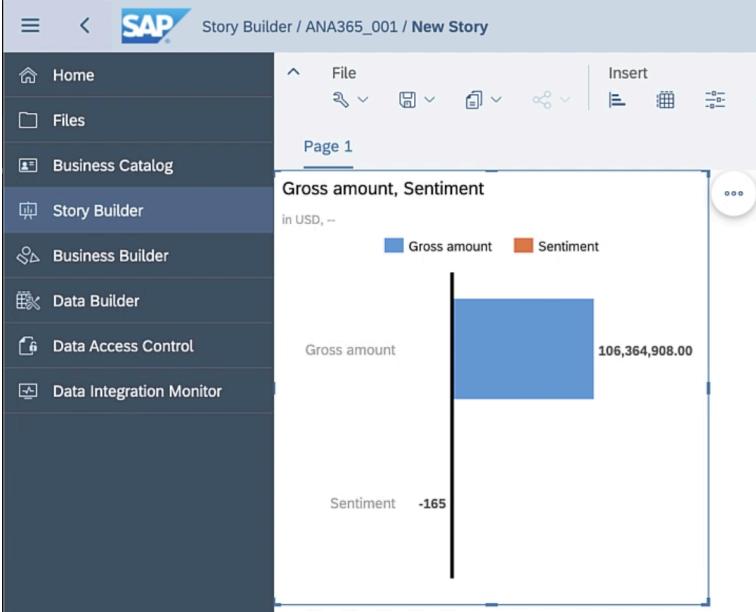
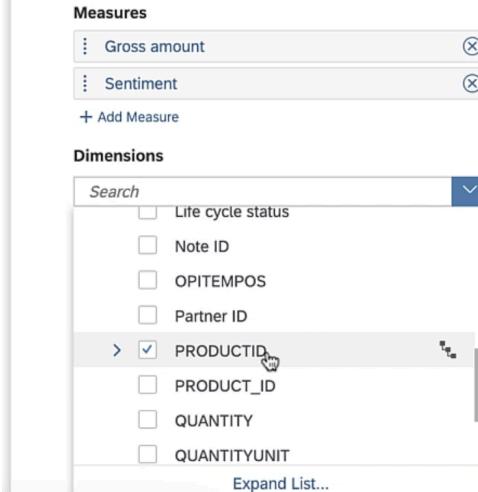
| Explanation | Screenshot |
|--|--|
| <p>157. Provide a meaningful Business Name and Technical Name and set the type to Analytical Dataset. Make sure to switch on the Exposing option.</p> |  <p>The screenshot shows the 'Properties' dialog for a dataset named 'Sales Data'. Under the 'Type' section, 'Analytical Dataset' is selected. Below it, the 'Exposing' option is turned 'ON', indicated by a blue button with the text 'ON'. A tooltip explains that this makes the artifact available for consumption in the Story Builder (Analytical Datasets only) and other analytical clients (all types).</p> |
| <p>158. Now that you have set the type as Analytical Dataset you can define measures. Scroll down and move the columns Sentiment, Gross amount, Net amount and Tax amount from the list of Attributes to the list of Measures.</p> |  <p>The screenshot shows the 'Properties' dialog for the same 'Sales Data' dataset. The 'Measures' tab is selected, showing a list with one item: '1.23 Gross amount'. Below the measures, the 'Attributes' tab is selected, showing attributes like 'AA Note ID', 'AA Partner ID', 'AA Sales Organisation', 'AA Currency key', '1.23 Gross amount', '1.23 Net amount', and '1.23 Tax amount'. The 'Gross amount' attribute is highlighted with a blue selection bar.</p> |

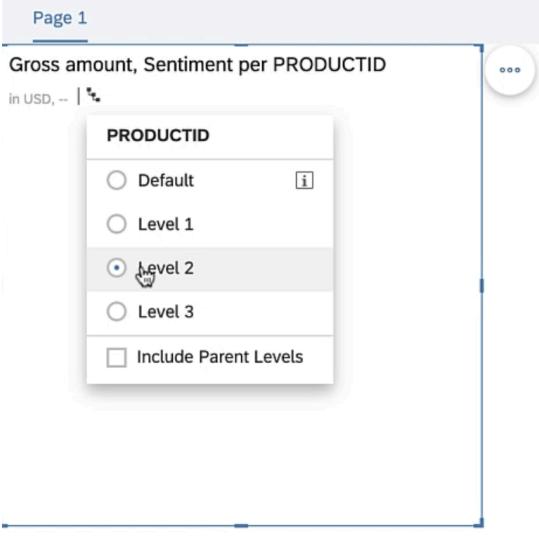
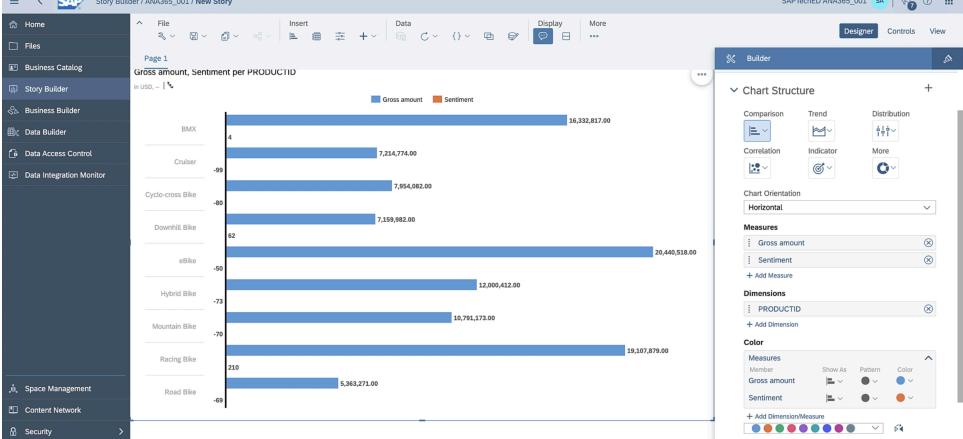
| Explanation | Screenshot |
|---|--|
| 159. Select the edit button for the Attributes. |  |
| 160. Change the Semantic Type for the column Currency key to Currency Code. |  |
| 161. Select the edit button for Measures. |  |
| 162. Change the Semantic Type for the three measures Gross amount, Net amount and Tax |  |

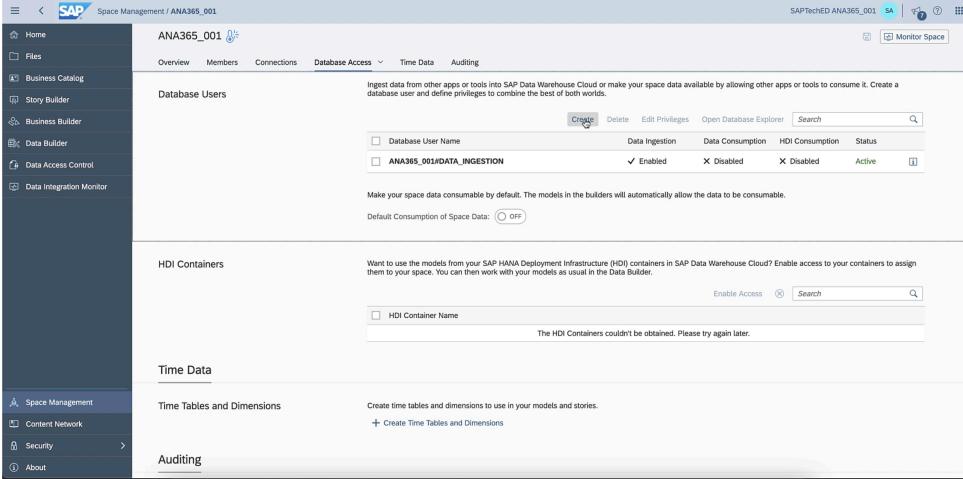
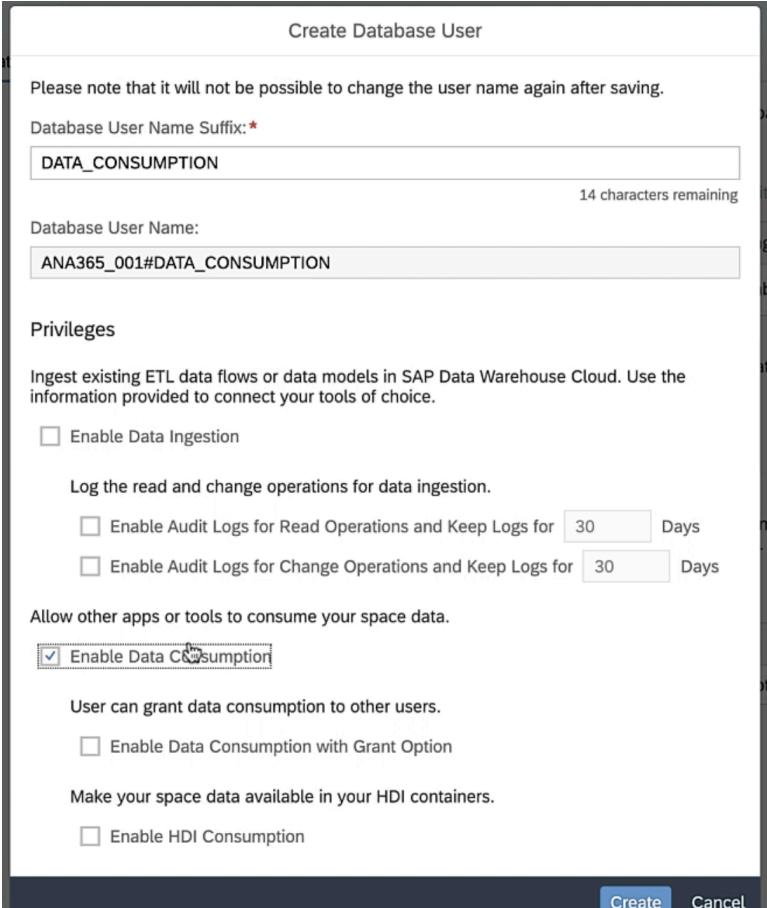
| Explanation | Screenshot |
|---|--|
| amount to Amount with Currency. | |
| 163. For the Unit Column select Currency key for the three measures. |  |
| 164. Close the dialog. |  |
| 165. Save and deploy the view and confirm the validation message in case it is shown. |  |

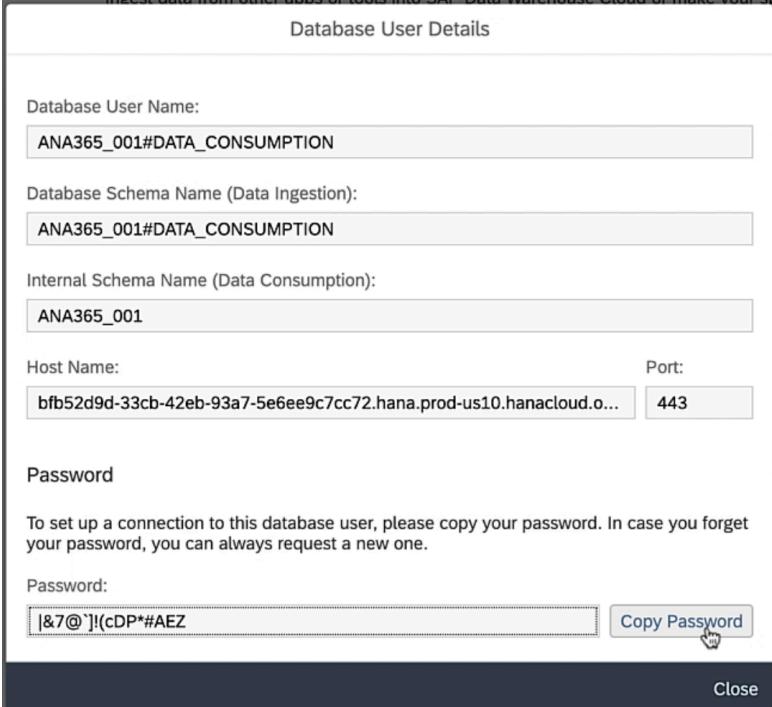
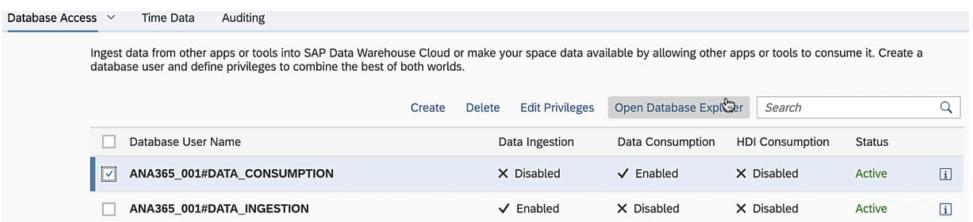
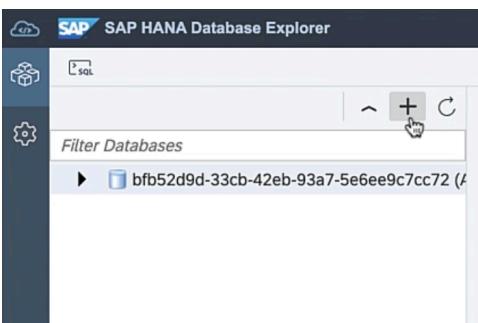
| Explanation | Screenshot |
|---|---|
| <p>166.Congratulations!</p> | <p>You created your data model and combined the different data assets. We are now ready to consume the data model in an application like SAP Analytics Cloud or a 3rd party external SQL application.</p> <p>In the next section we will experience both possible ways, before we finally take a look at how the models can be tweaked further to improve the performance and make sure that the source systems are not overloaded with data requests.</p> <p>We will start with creating a SAP Analytics Cloud story as an example, then take a look at how you can consume the exposed data models in a 3rd party SQL tool.</p> |
| <p>167.Select the Story Builder from the navigation bar and create a new story.</p> |  |
| <p>168.Select the Sales Data set you created earlier. If no entry is visible navigate back to the graphical Sales Data view and make sure the Exposing option is switched on!</p> |  |

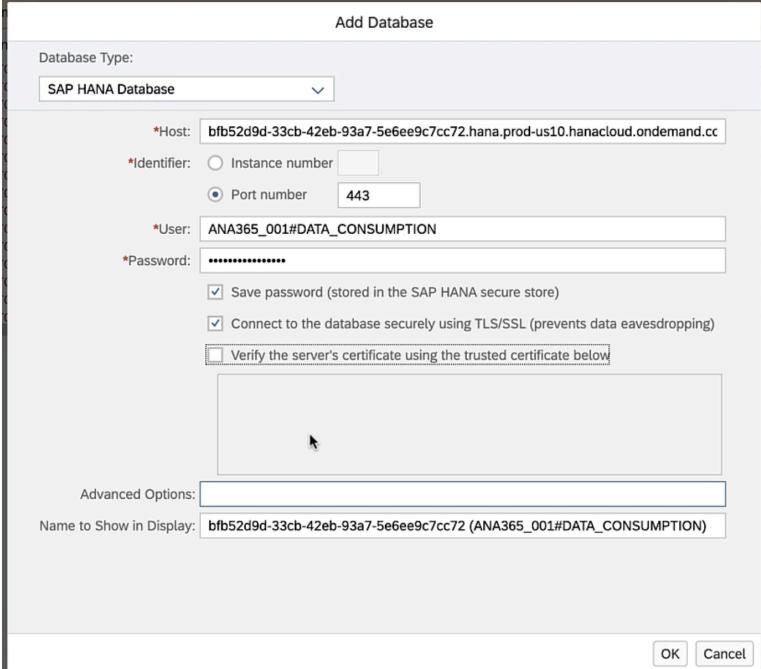
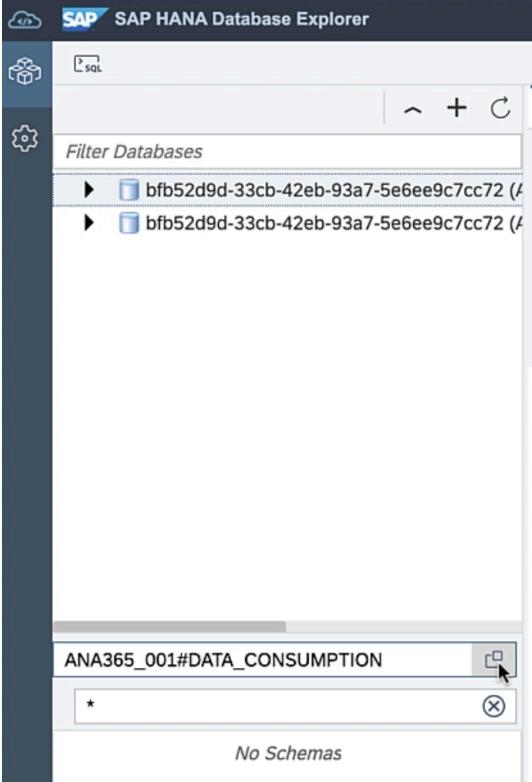
| Explanation | Screenshot |
|--|--|
| 169. Select the Chart option. |  <p>Add an object to the story canvas.</p> <ul style="list-style-type: none">  Chart  Geo Map  Table  Image  Shape  Text |
| 170. On the right add the two measures Gross amount and Sentiment. |  <p>Designer Controls View</p> <p>Builder</p> <p>Data Source Sales Data + Add Linked Models</p> <p>Chart Structure</p> <p>Comparison Trend Distribution Correlation Indicator More</p> <p>Chart Orientation: Horizontal</p> <p>Measures</p> <p>Gross amount</p> <p>Search</p> <p>CALCULATIONS + Create Calculation...</p> <p>MEASURES</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Gross amount <input type="checkbox"/> Net amount <input checked="" type="checkbox"/> Sentiment <input type="checkbox"/> Tax amount <p>Expand List...</p> |

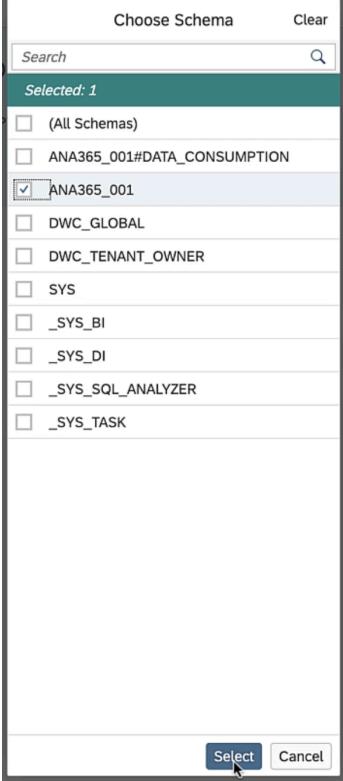
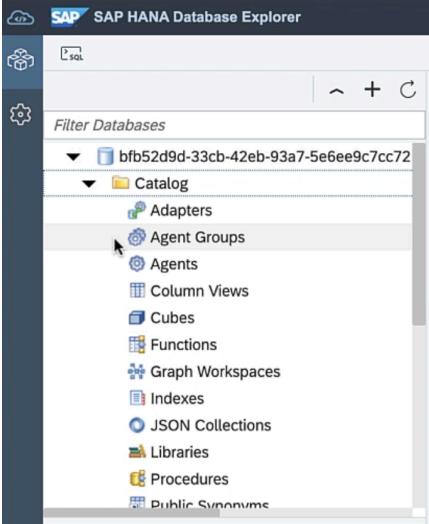
| Explanation | Screenshot |
|--|---|
| 171.The aggregated sum and sentiment is shown on the left. |  |
| 172.Add the PRODUCTID dimension to the list of Dimensions. |  |

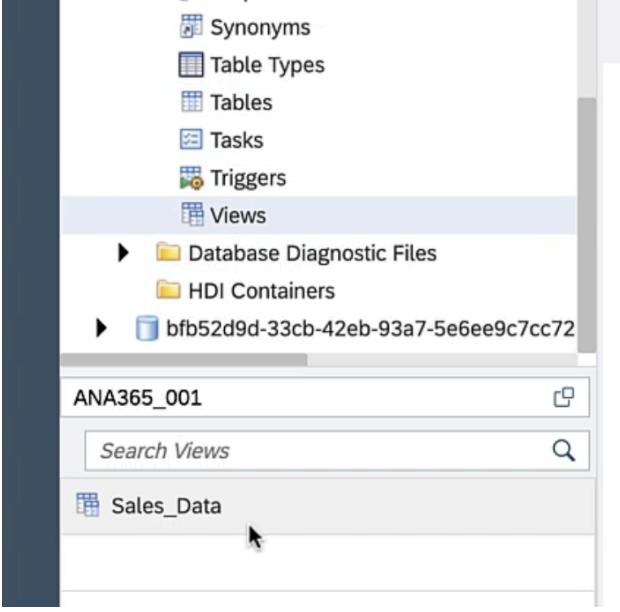
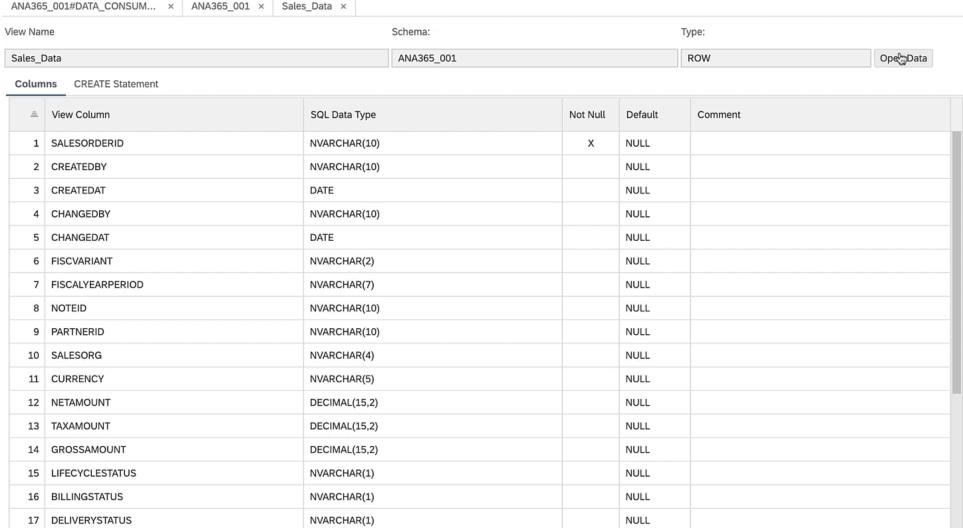
| Explanation | Screenshot |
|--|---|
| 173. Change the PRODUCTID hierarchy display to Level 2. |  <p>The screenshot shows a hierarchy selection dialog for 'PRODUCTID'. The 'Level 2' option is selected, indicated by a blue circle with a dot. Other options include 'Default', 'Level 1', 'Level 3', and 'Include Parent Levels'. The background shows a page titled 'Gross amount, Sentiment per PRODUCTID'.</p> |
| 174. Drag the canvas a little wider to get a good overview on the aggregated sentiment per product category. |  <p>The screenshot shows a horizontal bar chart in SAP Story Builder. The chart displays 'Gross amount' and 'Sentiment' for various product categories. The categories on the x-axis are BMX, Cruiser, Cyclo-cross Bike, Downhill Bike, eBike, Hybrid Bike, Mountain Bike, Racing Bike, and Road Bike. The bars show values ranging from approximately 5,363,271.00 to 16,332,817.00. The chart is part of a story titled 'Gross amount, Sentiment per PRODUCTID'.</p> |
| 175. Congratulations! | <p>You have successfully consumed the data set in the SAP Analytics Cloud story builder. You can go ahead and tweak and fine-tune the story as you like, however we will not drill down deeper into the possibilities of the SAP Analytics Cloud story builder for the sake of this data integration session.</p> <p>As a next step, let's check out how you can consume the very same data model using a 3rd party SQL external application.</p> |

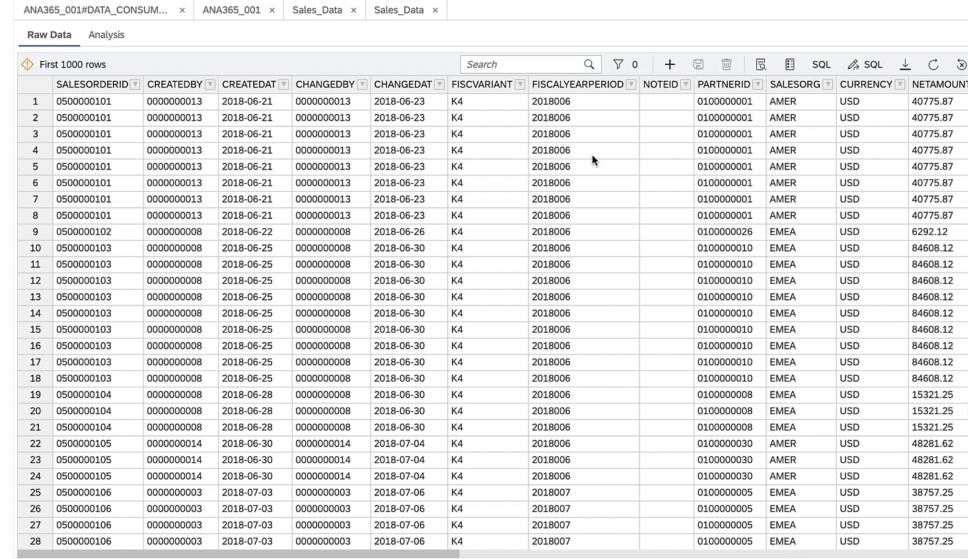
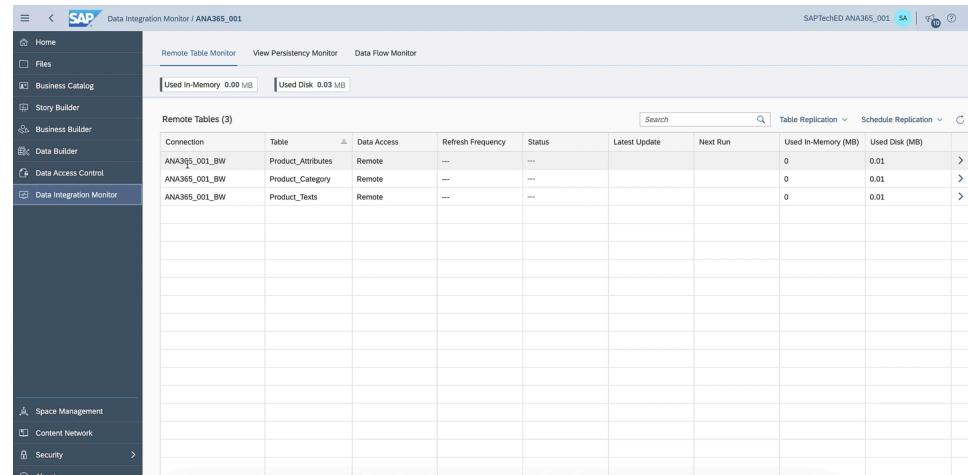
| Explanation | Screenshot |
|---|---|
| <p>176. Navigate back to the Space Management into your space to the Database Access section. Hit Create to create another Database User.</p> |  |
| <p>177. Provide a Database User Name Suffix like DATA_CONSUMPTION and make sure to select the Enable Data Consumption checkbox.</p> |  |

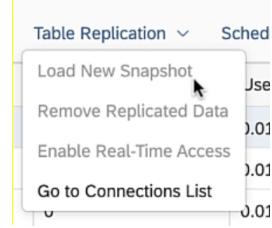
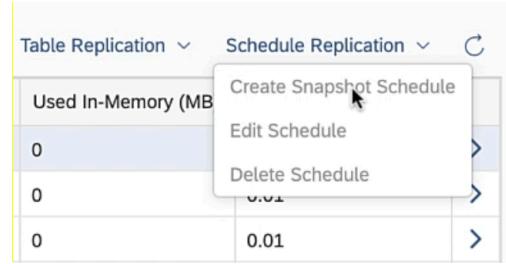
| Explanation | Screenshot | | | | | | | | | | | | | | | |
|--|---|--------------------|-----------------|------------------|-----------------|--------|---|------------|-----------|------------|--------|--|-----------|------------|------------|--------|
| 178. Copy over the Database User Name, Host Name, Port and Password to for example notepad. In case you lost the password later you can always return to this dialog and request a new password. |  <p>The screenshot shows the 'Database User Details' dialog. It includes fields for Database User Name, Database Schema Name (Data Ingestion), Internal Schema Name (Data Consumption), Host Name, Port, and a Password field. The Password field contains a long, complex string, and there is a 'Copy Password' button next to it.</p> | | | | | | | | | | | | | | | |
| 179. Select the newly created database user and hit the Open Database Explorer button on the right. |  <p>The screenshot shows the 'Database Access' page. It lists database users and their privileges. The user 'ANA365_001#DATA_CONSUMPTION' is selected, and the 'Open Database Explorer' button is highlighted with a cursor.</p> <table border="1"> <thead> <tr> <th>Database User Name</th> <th>Data Ingestion</th> <th>Data Consumption</th> <th>HDI Consumption</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> ANA365_001#DATA_CONSUMPTION</td> <td>✗ Disabled</td> <td>✓ Enabled</td> <td>✗ Disabled</td> <td>Active</td> </tr> <tr> <td><input type="checkbox"/> ANA365_001#DATA_INGESTION</td> <td>✓ Enabled</td> <td>✗ Disabled</td> <td>✗ Disabled</td> <td>Active</td> </tr> </tbody> </table> | Database User Name | Data Ingestion | Data Consumption | HDI Consumption | Status | <input checked="" type="checkbox"/> ANA365_001#DATA_CONSUMPTION | ✗ Disabled | ✓ Enabled | ✗ Disabled | Active | <input type="checkbox"/> ANA365_001#DATA_INGESTION | ✓ Enabled | ✗ Disabled | ✗ Disabled | Active |
| Database User Name | Data Ingestion | Data Consumption | HDI Consumption | Status | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> ANA365_001#DATA_CONSUMPTION | ✗ Disabled | ✓ Enabled | ✗ Disabled | Active | | | | | | | | | | | | |
| <input type="checkbox"/> ANA365_001#DATA_INGESTION | ✓ Enabled | ✗ Disabled | ✗ Disabled | Active | | | | | | | | | | | | |
| 180. In the SAP HANA Database Explorer (you can also use any other 3rd party SQL tool instead) hit the Add Database button. |  <p>The screenshot shows the SAP HANA Database Explorer interface. The 'Add Database' button is highlighted with a cursor.</p> | | | | | | | | | | | | | | | |

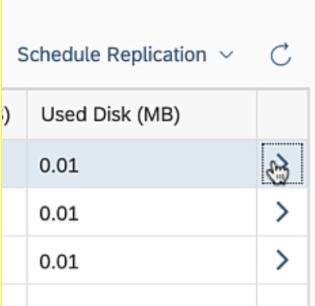
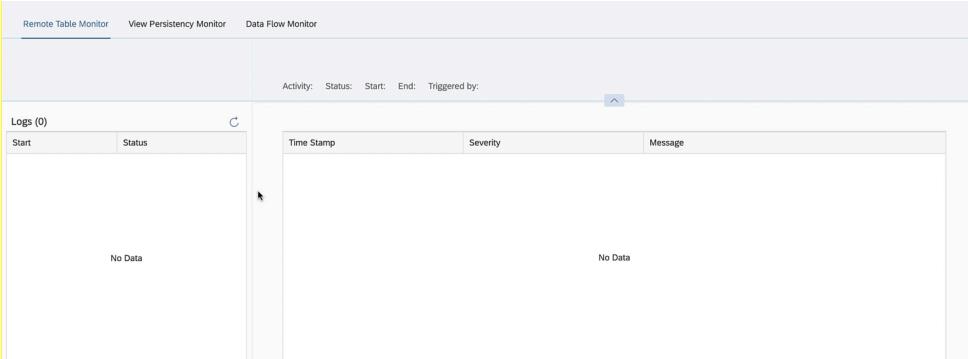
| Explanation | Screenshot |
|---|--|
| 181. Select the Database Type SAP HANA Database and enter the host, Port number, User and Password which you copied over from the other dialog in SAP Data Warehouse Cloud. Make sure to check the checkboxes Save password and Connect to the database... Make sure to un-check the Verify the server's certificate... checkbox. |  |
| 182. Select the value help button. |  |

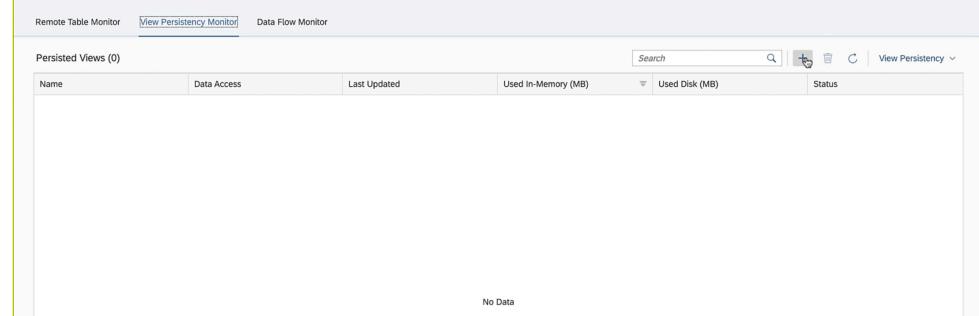
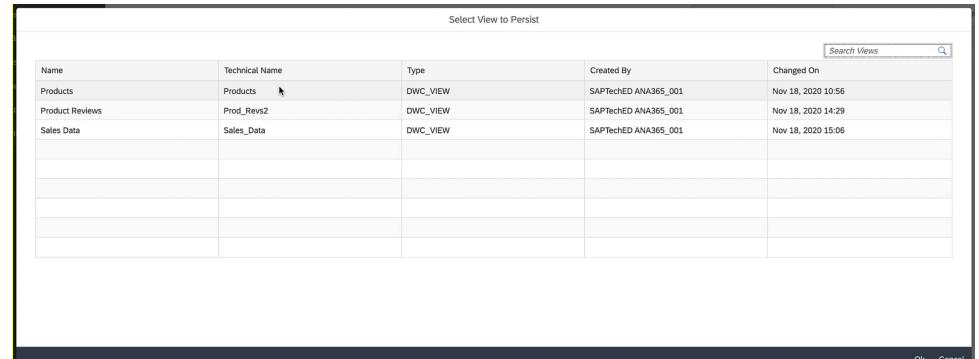
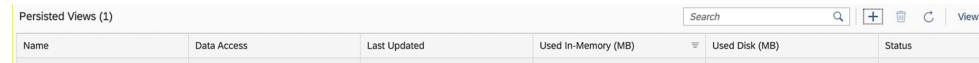
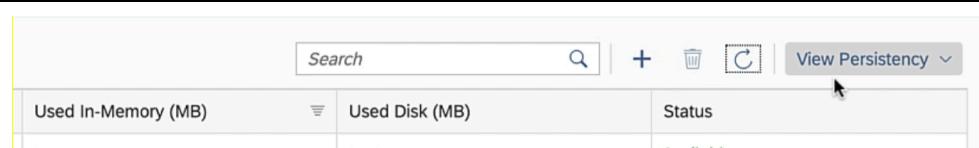
| Explanation | Screenshot |
|---|---|
| <p>183. Choose the schema matching your space name, for example ANA365_001.</p> |  |
| <p>184. Expand the database you just added and scroll down to Views.</p> |  |

| Explanation | Screenshot | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|-------------|---------------|----------|---------|---------|----------------|--------------|---|------|--|-------------|--------------|--|------|--|-------------|------|--|------|--|-------------|--------------|--|------|--|-------------|------|--|------|--|---------------|-------------|--|------|--|--------------------|-------------|--|------|--|----------|--------------|--|------|--|-------------|--------------|--|------|--|-------------|-------------|--|------|--|-------------|-------------|--|------|--|--------------|---------------|--|------|--|--------------|---------------|--|------|--|----------------|---------------|--|------|--|--------------------|-------------|--|------|--|------------------|-------------|--|------|--|-------------------|-------------|--|------|--|
| 185. Select Views and select your view Sales_Data from the list of available views below. |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 186. A new tab opens displaying the columns of this view like you created it in SAP Data Warehouse Cloud. Hit the Open Data button in the top right corner to preview the available data. |  <table border="1"> <thead> <tr> <th>View Column</th> <th>SQL Data Type</th> <th>Not Null</th> <th>Default</th> <th>Comment</th> </tr> </thead> <tbody> <tr><td>1 SALESORDERID</td><td>NVARCHAR(10)</td><td>X</td><td>NULL</td><td></td></tr> <tr><td>2 CREATEDBY</td><td>NVARCHAR(10)</td><td></td><td>NULL</td><td></td></tr> <tr><td>3 CREATEDAT</td><td>DATE</td><td></td><td>NULL</td><td></td></tr> <tr><td>4 CHANGEDBY</td><td>NVARCHAR(10)</td><td></td><td>NULL</td><td></td></tr> <tr><td>5 CHANGEDAT</td><td>DATE</td><td></td><td>NULL</td><td></td></tr> <tr><td>6 FISCVARIANT</td><td>NVARCHAR(2)</td><td></td><td>NULL</td><td></td></tr> <tr><td>7 FISCALYEARPERIOD</td><td>NVARCHAR(7)</td><td></td><td>NULL</td><td></td></tr> <tr><td>8 NOTEID</td><td>NVARCHAR(10)</td><td></td><td>NULL</td><td></td></tr> <tr><td>9 PARTNERID</td><td>NVARCHAR(10)</td><td></td><td>NULL</td><td></td></tr> <tr><td>10 SALESORG</td><td>NVARCHAR(4)</td><td></td><td>NULL</td><td></td></tr> <tr><td>11 CURRENCY</td><td>NVARCHAR(5)</td><td></td><td>NULL</td><td></td></tr> <tr><td>12 NETAMOUNT</td><td>DECIMAL(15,2)</td><td></td><td>NULL</td><td></td></tr> <tr><td>13 TAXAMOUNT</td><td>DECIMAL(15,2)</td><td></td><td>NULL</td><td></td></tr> <tr><td>14 GROSSAMOUNT</td><td>DECIMAL(15,2)</td><td></td><td>NULL</td><td></td></tr> <tr><td>15 LIFECYCLESTATUS</td><td>NVARCHAR(1)</td><td></td><td>NULL</td><td></td></tr> <tr><td>16 BILLINGSTATUS</td><td>NVARCHAR(1)</td><td></td><td>NULL</td><td></td></tr> <tr><td>17 DELIVERYSTATUS</td><td>NVARCHAR(1)</td><td></td><td>NULL</td><td></td></tr> </tbody> </table> | View Column | SQL Data Type | Not Null | Default | Comment | 1 SALESORDERID | NVARCHAR(10) | X | NULL | | 2 CREATEDBY | NVARCHAR(10) | | NULL | | 3 CREATEDAT | DATE | | NULL | | 4 CHANGEDBY | NVARCHAR(10) | | NULL | | 5 CHANGEDAT | DATE | | NULL | | 6 FISCVARIANT | NVARCHAR(2) | | NULL | | 7 FISCALYEARPERIOD | NVARCHAR(7) | | NULL | | 8 NOTEID | NVARCHAR(10) | | NULL | | 9 PARTNERID | NVARCHAR(10) | | NULL | | 10 SALESORG | NVARCHAR(4) | | NULL | | 11 CURRENCY | NVARCHAR(5) | | NULL | | 12 NETAMOUNT | DECIMAL(15,2) | | NULL | | 13 TAXAMOUNT | DECIMAL(15,2) | | NULL | | 14 GROSSAMOUNT | DECIMAL(15,2) | | NULL | | 15 LIFECYCLESTATUS | NVARCHAR(1) | | NULL | | 16 BILLINGSTATUS | NVARCHAR(1) | | NULL | | 17 DELIVERYSTATUS | NVARCHAR(1) | | NULL | |
| View Column | SQL Data Type | Not Null | Default | Comment | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 SALESORDERID | NVARCHAR(10) | X | NULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 CREATEDBY | NVARCHAR(10) | | NULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 CREATEDAT | DATE | | NULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 CHANGEDBY | NVARCHAR(10) | | NULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 CHANGEDAT | DATE | | NULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 FISCVARIANT | NVARCHAR(2) | | NULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 FISCALYEARPERIOD | NVARCHAR(7) | | NULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 NOTEID | NVARCHAR(10) | | NULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 PARTNERID | NVARCHAR(10) | | NULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 SALESORG | NVARCHAR(4) | | NULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 CURRENCY | NVARCHAR(5) | | NULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 NETAMOUNT | DECIMAL(15,2) | | NULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 TAXAMOUNT | DECIMAL(15,2) | | NULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 GROSSAMOUNT | DECIMAL(15,2) | | NULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 LIFECYCLESTATUS | NVARCHAR(1) | | NULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 BILLINGSTATUS | NVARCHAR(1) | | NULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 DELIVERYSTATUS | NVARCHAR(1) | | NULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Explanation | Screenshot | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--------------|-------------------|-------------|-------------------|------------------|---------------------|------------------|---------------------|----------------|---------------|--------------------|-----------|--------------|------------|------------|------------|------------|------|---------------|------------------|--------|-----|----------|--------------|------------|------------|------------|---------------|---------------|---------|-----------|------|-----|----------|--------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|--------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|--------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|--------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|--------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|--------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|--------------|------------|------------|------------|------------|----|---------|------------|------|-----|---------|---------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|---------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|---------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|---------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|---------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|---------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|---------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|---------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|---------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|---------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|---------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|---------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|---------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|---------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|---------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|---------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|---------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|---------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|---------------|------------|------------|------------|------------|----|---------|-----------|------|-----|----------|
| <p>187. The same data is displayed as in SAP Data Warehouse Cloud. The data is fetched live from the view you created in the Data Builder in your space.</p> |  <table border="1"> <thead> <tr> <th>SALESORDERID</th> <th>CREATEDBY</th> <th>CREATEDAT</th> <th>CHANGEDBY</th> <th>CHANGEDAT</th> <th>FISCVARIANT</th> <th>FISCALYEARPERIOD</th> <th>NOTEID</th> <th>PARTNERID</th> <th>SALESORG</th> <th>CURRENCY</th> <th>NETAMOUNT</th> </tr> </thead> <tbody> <tr><td>1 0500000101</td><td>0000000013</td><td>2018-06-21</td><td>0000000013</td><td>2018-06-23</td><td>K4</td><td>2018006</td><td>010000001</td><td>AMER</td><td>USD</td><td>40775.87</td></tr> <tr><td>2 0500000101</td><td>0000000013</td><td>2018-06-21</td><td>0000000013</td><td>2018-06-23</td><td>K4</td><td>2018006</td><td>010000001</td><td>AMER</td><td>USD</td><td>40775.87</td></tr> <tr><td>3 0500000101</td><td>0000000013</td><td>2018-06-21</td><td>0000000013</td><td>2018-06-23</td><td>K4</td><td>2018006</td><td>010000001</td><td>AMER</td><td>USD</td><td>40775.87</td></tr> <tr><td>4 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| 11 0500000103 | 0000000008 | 2018-06-25 | 0000000008 | 2018-06-30 | K4 | 2018006 | 010000010 | EMEA | USD | 84608.12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 0500000103 | 0000000008 | 2018-06-25 | 0000000008 | 2018-06-30 | K4 | 2018006 | 010000010 | EMEA | USD | 84608.12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 0500000103 | 0000000008 | 2018-06-25 | 0000000008 | 2018-06-30 | K4 | 2018006 | 010000010 | EMEA | USD | 84608.12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 0500000103 | 0000000008 | 2018-06-25 | 0000000008 | 2018-06-30 | K4 | 2018006 | 010000010 | EMEA | USD | 84608.12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 0500000103 | 0000000008 | 2018-06-25 | 0000000008 | 2018-06-30 | K4 | 2018006 | 010000010 | EMEA | USD | 84608.12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 0500000103 | 0000000008 | 2018-06-25 | 0000000008 | 2018-06-30 | K4 | 2018006 | 010000010 | EMEA | USD | 84608.12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 0500000103 | 0000000008 | 2018-06-25 | 0000000008 | 2018-06-30 | K4 | 2018006 | 010000010 | EMEA | USD | 84608.12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 0500000103 | 0000000008 | 2018-06-25 | 0000000008 | 2018-06-30 | K4 | 2018006 | 010000010 | EMEA | USD | 84608.12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 0500000104 | 0000000008 | 2018-06-28 | 0000000008 | 2018-06-30 | K4 | 2018006 | 010000008 | EMEA | USD | 15321.25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 0500000104 | 0000000008 | 2018-06-28 | 0000000008 | 2018-06-30 | K4 | 2018006 | 010000008 | EMEA | USD | 15321.25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 0500000104 | 0000000008 | 2018-06-28 | 0000000008 | 2018-06-30 | K4 | 2018006 | 010000008 | EMEA | USD | 15321.25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 0500000105 | 0000000014 | 2018-06-30 | 0000000014 | 2018-07-04 | K4 | 2018006 | 010000030 | AMER | USD | 48281.62 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 0500000105 | 0000000014 | 2018-06-30 | 0000000014 | 2018-07-04 | K4 | 2018006 | 010000030 | AMER | USD | 48281.62 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 0500000105 | 0000000014 | 2018-06-30 | 0000000014 | 2018-07-04 | K4 | 2018006 | 010000030 | AMER | USD | 48281.62 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 0500000106 | 0000000003 | 2018-07-03 | 0000000003 | 2018-07-06 | K4 | 2018007 | 010000005 | EMEA | USD | 38757.25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26 0500000106 | 0000000003 | 2018-07-03 | 0000000003 | 2018-07-06 | K4 | 2018007 | 010000005 | EMEA | USD | 38757.25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27 0500000106 | 0000000003 | 2018-07-03 | 0000000003 | 2018-07-06 | K4 | 2018007 | 010000005 | EMEA | USD | 38757.25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 0500000106 | 0000000003 | 2018-07-03 | 0000000003 | 2018-07-06 | K4 | 2018007 | 010000005 | EMEA | USD | 38757.25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>188. Congratulations!</p> | <p>You now know how to consume data models within SAP Data Warehouse Cloud using the Story Builder or externally via the Open SQL Schema using Database Users enabled for consumption and any external 3rd party SQL client.</p> <p>Let's continue with the last section of this hands-on! We will now check out how we can replicate data to SAP Data Warehouse Cloud using the Remote Table replication and View Materialization.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>189. In SAP Data Warehouse Cloud navigate to the Data Integration Monitor.</p> |  <table border="1"> <thead> <tr> <th>Connection</th> <th>Table</th> <th>Data Access</th> <th>Refresh Frequency</th> <th>Status</th> <th>Latest Update</th> <th>Next Run</th> <th>Used In-Memory (MB)</th> <th>Used Disk (MB)</th> </tr> </thead> <tbody> <tr><td>ANA365_001_BW</td><td>Product_Attributes</td><td>Remote</td><td>---</td><td>---</td><td></td><td></td><td>0</td><td>0.01</td></tr> <tr><td>ANA365_001_BW</td><td>Product_Category</td><td>Remote</td><td>---</td><td>---</td><td></td><td></td><td>0</td><td>0.01</td></tr> <tr><td>ANA365_001_BW</td><td>Product_Texts</td><td>Remote</td><td>---</td><td>---</td><td></td><td></td><td>0</td><td>0.01</td></tr> </tbody> </table> | Connection | Table | Data Access | Refresh Frequency | Status | Latest Update | Next Run | Used In-Memory (MB) | Used Disk (MB) | ANA365_001_BW | Product_Attributes | Remote | --- | --- | | | 0 | 0.01 | ANA365_001_BW | Product_Category | Remote | --- | --- | | | 0 | 0.01 | ANA365_001_BW | Product_Texts | Remote | --- | --- | | | 0 | 0.01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Connection | Table | Data Access | Refresh Frequency | Status | Latest Update | Next Run | Used In-Memory (MB) | Used Disk (MB) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ANA365_001_BW | Product_Attributes | Remote | --- | --- | | | 0 | 0.01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ANA365_001_BW | Product_Category | Remote | --- | --- | | | 0 | 0.01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ANA365_001_BW | Product_Texts | Remote | --- | --- | | | 0 | 0.01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>190. For any remote table you create in your space in SAP Data Warehouse Cloud you can control whether</p> |  <ul style="list-style-type: none"> Load New Snapshot Remove Replicated Data Enable Real-Time Access Go to Connections List | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Explanation | Screenshot |
|---|---|
| <p>the data access is remote (no data is stored permanently in your space, but always accessed live during query runtime) or replicated (real-time or snapshot). Using the Table Replication menu in the top right corner you can enable snapshot or realtime replication if available.</p> | |
| <p>191. Select the line for the Product_Attributes table and then select Load New Snapshot to replicate the remote table Product_Attributes to your space.</p> |  |
| <p>192. For snapshot replications you can also create a schedule. Creating a schedule allows you to automatically create new snapshots based on the provided frequency. Go ahead and create a Snapshot Schedule for this table.</p> |  |

| Explanation | Screenshot | | | | | | | | | | |
|---|---|----------------|--------|---------|---|------------|----------|---------|---------|--|--|
| <p>193. Clicking on the little arrow icon on the right takes you to the replication monitor logs for the data replication tasks for the selected table.</p> |  <table border="1"> <thead> <tr> <th>Used Disk (MB)</th> <th></th> </tr> </thead> <tbody> <tr> <td>0.01</td> <td>></td> </tr> <tr> <td>0.01</td> <td>></td> </tr> <tr> <td>0.01</td> <td>></td> </tr> </tbody> </table> | Used Disk (MB) | | 0.01 | > | 0.01 | > | 0.01 | > | | |
| Used Disk (MB) | | | | | | | | | | | |
| 0.01 | > | | | | | | | | | | |
| 0.01 | > | | | | | | | | | | |
| 0.01 | > | | | | | | | | | | |
| <p>194. The Logs screen gives you an overview of all past and currently running replications.</p> |  <table border="1"> <thead> <tr> <th>Start</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td colspan="2">No Data</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Time Stamp</th> <th>Severity</th> <th>Message</th> </tr> </thead> <tbody> <tr> <td colspan="3">No Data</td> </tr> </tbody> </table> | Start | Status | No Data | | Time Stamp | Severity | Message | No Data | | |
| Start | Status | | | | | | | | | | |
| No Data | | | | | | | | | | | |
| Time Stamp | Severity | Message | | | | | | | | | |
| No Data | | | | | | | | | | | |
| <p>195. Replicating a remote table always replicates all the data from this table 1:1. This might not be needed if you apply filters in views that use this table and therefore only a require a subset of the actual data of this remote table. Go back to the Remote Table Monitor and change the Data Access back to Remote.</p> | <p>Tbd</p> | | | | | | | | | | |

| Explanation | Screenshot |
|--|--|
| 196. To only persist the result of a modeled view, select the View Persistence Monitor. Hit the Add button on the right create a new view persistence. |  |
| 197. From the dialog select the Products view. |  |
| 198. After confirming the dialog you can see that a new view persistence was created and the status is Loading. |  |
| 199. Hit Refresh until the status changes to Available. |  |
| 200. Congratulations! | <p>You made it! You finished the exercise and experienced all the different aspects of data integration in SAP Data Warehouse Cloud. As a review, during the session you learned about, how to create federated and replicated connections to SAP & non-SAP, cloud and on-premises data sources, how to load data into SAP Data Warehouse Cloud using external SQL clients, how to upload CSV files, how to model ETL processes to extract data from external sources into SAP Data Warehouse Cloud, how to consume & visualize data models using the SAP Analytics Cloud story builder and external SQL clients, ... hope you enjoyed it!</p> |

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