Senturus Analytics Connector



Cognos to Power BI

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Overview

This user guide describes how the Senturus Analytics Connector is used from Power BI after it has been installed and configured.

Please refer to the *Senturus Analytics Connector Installation and Configuration Guide* for instructions on installing and configuring the Analytics Connector.

The Analytics Connector is designed for Power BI and has been tested against different versions, including both Power BI Desktop and Power BI Gateway on Windows starting with the August 2018 release. For optimal stability and performance, it is recommended that you keep your Power BI software fully updated.

Model Caching

The Analytics Connector caches model information (FM packages, data modules, cubes) to offer the best performance.

As of version 5.4, when a model is updated, the Analytics Connector will pick up those changes. Model updating happens in two phases. The first phase detects the model change and marks it for update. The second phase propagates the model changes to Power BI. The first phase happens during normal use of the Connector but can be manually started by performing a data refresh via the command ribbon. The second phase must be started by performing a data refresh.



It is possible for the Power BI version of the model to get out of sync with the Cognos version of the model. If this happens, an error will be thrown expressing what part of the model is causing issues. Simply perform a data refresh again to get them back in sync.

Connecting to Analytics Connector Server

You don't connect to Cognos directly from Power BI Desktop or Power BI Gateway. Instead you connect to the Analytics Connector server and the Analytics Connector server connects to a Cognos dispatcher on your behalf. For more information, please refer to the "Architecture Overview" section in the Senturus Analytics Connector Installation Guide.

You connect to the Analytics Connector Server using the Power BI built-in SQL Server database connector.

Conecting via SQL Server Connector¹

To begin, open Power BI Desktop and select **Get Data -> SQL Server** from the ribbon. "SQL Server database" dialog pops up.

In Server input box, Type in hostname of IP of Analytics Connector server.

In **Database (optional)** input box, type in database name given by your Analytics Connector administrator when he/she mapped a Cognos package or data module to it.

Check **DirectQuery** and (optionally) uncheck "Include relationship columns" and check "**Navigate** using full hierarchy".

The Senturus Analytics Connector supports both Import and DirectQuery modes. For the sake of simplicity, we will only use DirectQuery in this section. For more information regarding when and how to use Import vs DirectQuery mode, please refer to the next section.

Then click on **OK** button.

¹ Make sure you have installed the SQL Server Native Client 11 or above in order to use SQL database connection. The download can be found here: <u>https://www.microsoft.com/en-us/download/details.aspx?id=50402</u>

SQL Server database		
Server (i)		
win03.example.com		
Database (optional)		
GO Sales (query)		
Data Connectivity mode 🛈		
O Import		
 DirectQuery 		
Advanced options		
Command timeout in minutes (optional)		
SQL statement (optional, requires database)		
Include relationship columns		
✓ Navigate using full hierarchy		
Enable SQL Server Failover support		
	OK	Cancel
	- OK	

You can use **Database** authentication (by providing your Cognos login user name and password).

	SQL Server database ×
Windows	win03.example.com;GO Sales (query)
Database	User name cognos
Microsoft account	Password Select which level to apply these settings to
	win03.example.com;GO Sales (query) * Back Connect Cancel

NOTE: Power BI desktop will securely store these credentials and skip this dialog if you have entered before.

To manage or delete the stored authentication information, go to File \rightarrow Options and settings \rightarrow Data source settings.

You may see a warning popup if SSL is not enabled on the Analytics Connector server. Click **OK** to dismiss this message.



If your database is mapped from Cognos package, you will see the following objects in the Navigator panel:

1. Each namespace is mapped to a schema. You will see some system schemas when connecting to a real SQL server database.

2. Each query subject is mapped to a table.

3. Each query item will be mapped to a column. Plus a dummy column, AAA_LINK, in each mapped table. See Creating Relationships regarding more informaton.

4. If you have standalone calculations under a namespace, each calculation is mapped to a column under a special table **AAA_CALCULATIONS** (table name is configurable in Data Source Configuration tool). You can use this special table the same as other query subject mapped tables.

5. If you configured schema to report folder mappings, each report will be mapped to a table under a schema. However, you cannot use report mapped tables as regular tables, please refer to Working with Reports for more information.

If your database is mapped from a Cognos data module, you will see following objects in the Navigator panel:

1. Only one schema with the same name as your data module. You will see some system schemas when connecting to a real SQL server database.

2. Each table in a data module is mapped to a SQL Server database table.

3. If you configured schema to report folder mappings, each report will be mapped to a table under a schema. However, you cannot use report mapped tables as regular tables, please refer to Working with Reports for more information.

Select only tables you need to pull columns from and click on Load button.

Hint: You don't have to wait table preview to be loaded before clicking on Load button. Additionally, you can uncheck the **Display Options -> Enable data previews** option to skip previews.

	Q	Products			
play Options 🔻	C.	AAA_LINK	Product line code	Product line	Product type co
Only selected items		1	994	Outdoor Protection	
Finable data previews		2	991	Camping Equipment	
Sales (quep) [15]		3	993	Personal Accessories	
		4	993	Personal Accessories	
V I Branch		5	993	Personal Accessories	
		6	993	Personal Accessories	
🔲 🛅 Order		7	993	Personal Accessories	
🔲 🛅 Order method		8	994	Outdoor Protection	
Parameterized Products		9	991	Camping Equipment	
Parameterized Products 2		10	991	Camping Equipment	
		11	994	Outdoor Protection	
		13	994	Outdoor Protection	
		14	994	Outdoor Protection	_
		15	994	Outdoor Protection	
✓ I Sales		16	991	Camping Equipment	
□ □ Sales staff		17	991	Camping Equipment	
🔽 🛅 Time		18	991	Camping Equipment	
🔲 🛅 Time (close date)		19	991	Camping Equipment	
🔲 🦳 Time (ship date)		20	995	Golf Equipment	
		21	994	Outdoor Protection	
		22	995	Golf Equipment	
Sales target (query)	\sim	23	993	Personal Accessories	
sys		<			>

Power BI will then inspect the selected tables and load them into a report.

Apply query changes	×
: Sales Evaluating	
.: Time Evaluating	
.: Products Evaluating	
.: Branch Evaluating	
	Cancel

After loading tables into Power BI, you need to create relationships among tables before building report pages. Please refer to Creating Relationships for more information.

Import vs DirectQuery Mode

Differences

The Senturus Analytics Connector supports both Import and DirectQuery modes. The bottom line is the Senturus Analytics Connector sever has no clue if a query is sent for Import or DirectQuery.

Basic Difference

The basic difference between Import and DirectQuery mode is, Import mode extracts the data from your database and pulls it into the Power BI report, while DirectQuery leaves the data in your database and sends queries (usually grouped and aggregated) to pull the information as needed.

Other things to note. Import gives you the full suite of transformation and data manipulation in the Desktop, but there is a 1 GB limit to the report if you plan on publishing to the PBI Service. DirectQuery leaves the data in your database, so the data will always be live/up-to-date and there is no need to refresh.

Performance

Import is usually faster than DirectQuery, and it reduces your database workload because everything is already imported into a Power BI report but this is not always true. Results vary depending on your live database performance and the size/structure of imported data.

Security

When you use DirectQuery, the Senturus Analytics Connector server logs into Cognos on behalf of you, so all Cognos securities will be enforced, for example package/report access security, and row level security built-in your Cognos model and reports.

When you use Import mode, Cognos securities will be applied only when you import the data. Once data is imported into Power BI, they are disconnected from Analytics Connector/Cognos, so all data will be open to anyone that has access to this Power BI report until you set up row-level security in your Power BI report.

Relationship Setup

Whether your Cognos models (FM packages, data modules, cubes) expose primary and foreign keys also affects your options of which one to use. If there are no join columns between tables (derived Cognos query subjets, hierarchies, etc.), then you cannot join imported tables in Power BI. We will dicuss this in detail later. There is some workaround though, please refer to Join Tables without Key Columns for more information.

Other

The last difference is, Import mode is only available when you are using the SQL Server connector².

Import Mode is generally not recommended. It bypasses any Cognos row-level security that's been established so any data access logs and audit trails are either lost or need to be rebuilt in Power BI. Relationships are also not as straightforward to make if your Cognos models don't expose primary and foreign keys (See <u>Relationship Setup</u>). Lastly, measures in your Cognos DMR models may not work properly when in Import mode. Measures are dependent on the aggregation level being applied. When using Import mode, the correct aggregation level cannot be deduced and the Connector uses the default aggregation level set in Framework Manager which may lead to skewed results.

If you find yourself needing to use Import mode, the recommended approach is to create a Cognos list report that pulls all the data points you need at the appropriate aggregation level for your calculations. Once this report is in place, use the RunReport function to use the report as your data source.

Composite Mode

Starging from the December 2020 release, Power BI supports composite models, which means you can mix DirectQuery and Import tables/queries in one report. You still need to make sure PK/FK are available when joining from/to an imported table/query – otherwise, they have to be DirectQuery tables.

Import Tables

We already showed you how to connect tables via DirectQuery mode in the previous section. Importing tables follows the exact same steps, except you need to check the "**Import**" option.

² You can setup an ODBC DSN using SQL Server native client 11.0+ or Senturus Analytics Connector ODBC client, then import tables/queries using Power BI ODBC connector. This is how it works in previous release before V5. This will still work, but we recommend you use SQL Server Database connector in Import mode for all new reports.

		×
SQL Server database		
Server (i)		
localhost		
Database (optional)		
Data Connectivity mode (1)		
• Import		
O DirectQuery		
▲ Advanced options		
Command timeout in minutes (optional)		
SQL statement (optional, requires database)		
Include relationship columns		
✓ Navigate using full hierarchy		
Enable SQL Server Failover support		
	ОК	Cancel

Importing Queries

You can also specify a query to import instead of individual tables.

Within the "**SQL Server database**" page, type in "**Database**" (it's now mandatory when importing a query), and put a valid select script in "**SQL statement (optional, requires database)**" box. You can use standard SQL select statements here, including filter, group, aggregates, functions, even sub-queries. We cannot guarantee it will support all select statements, so keep it as simple as possible.

The schema, tables and columns are derived from your Cognos model, as you can see during the importing tables page. Also, please use **AAA_LINK** to join your tables (see screenshot for example).

SQL Server database	:
Server (1)	
localhost	
Database	
Great Outdoors Sales (cube)	
Data Connectivity mode 🛈	
Import	
O DirectQuery	
▲ Advanced options	
Command timeout in minutes (optional)	
SQL statement (optional, requires database)	
<pre>select m.*, p."Product line", p."Pi from "great_outdoors_sales_en"."Ne join "great_outdoors_sales_en" join "great_outdoors_sales_en" where y."Year" between '2010' and </pre>	<pre>roduct type", p."Product", y."Year", y."Quarter", y."Month" sures" as m "Products" as p on (m.AAA_LINK = p.AAA_LINK) "Years" as y on (m.AAA_LINK = y.AAA_LINK) '2013' </pre>
Include relationship columns	
Navigate using full hierarchy	
Enable SQL Server Failover support	
	OK Cancel

After clicking OK, this query will be sent to the Analytics Connector server and a preview page will display the result once data is returned. Click "**Load**" to import it into Power BI report or "**Transform Data**" to do more transformation before loading.

	Revenue	Product cost	Product plan	Branch expense plan	Quantity sold	Unit cost	Gross profit	Profit margin %	Re
1	189953.61	104562.9	2818.444189	null	15795	6.62	85390.71	0.44953455	
2	240887.99	180255.98	3075.567182	null	27229	6.62	60632.01	0.25170209	
3	193228.47	106337.06	2856.811802	null	16063	6.62	86891.41	0.44968223	
4	176147.19	96764.54	2733.5905	null	14617	6.62	79382.65	0.45066089	
5	194226.84	107402.88	2952.939904	null	16224	6.62	86823.96	0.44702349	
6	291978.89	218930.02	4563.642187	null	33071	6.62	73048.87	0.25018545	
7	205243.79	113155.66	2749.58619	null	17093	6.62	92088.13	0.44867682	
8	206435.99	113857.38	2864.817838	null	17199	6.62	92578.61	0.44846158	
9	192593.94	105946.48	2704.112935	null	16004	6.62	86647.46	0.44989713	
10	225718.45	125018.7	3106.758609	null	18885	6.62	100699.75	0.4461299	
11	208005.52	114459.8	2861.678251	null	17290	6.62	93545.72	0.4497271	
12	187243.54	103020.44	2572.886108	null	15562	6.62	84223.1	0.4498051	
13	305582.64	154801.4553	5186.517656	null	34614	4.47222093	151275.36	0.49503912	
14	237334.98	129368.04	3165.185872	null	19542	6.62	107966.94	0.45491373	
15	257161.83	130341.0198	3716.975098	null	29109	4.47768799	127279.05	0.49493757	
16	226707.92	123767.52	3316.171447	null	18696	6.62	102940.4	0.45406618	
17	225011.43	122754.66	2811.693524	null	18543	6.62	102256.77	0.45445145	
18	224694.79	122827.48	3028.743411	null	18554	6.62	101867.31	0.45335858	
19	232952.46	126859.06	3223.113959	null	19163	6.62	106093.4	0.4554294	
20	217680.62	118471.52	2766.177037	null	17896	6.62	99209.1	0.45575532	

Once the query is imported, you click on the "**Data**" tab to view the data and make more transformation as needed.

U	5 6		Un	titled - Power BI D	esktop				
File	e Home	Help	Table tools	Column too	ols				
⊘ N 123 D	lame AAA_ lata type Whole	LINK e number	\$% Forma ↓ \$ ~ %	at Whole number 9 →00 0	· · · · · · · · · · · · · · · · · · ·	∑ Summ E Data c	arization Sum ategory Uncatego	v orized v	
	Structu	ure		Formatting			Properties		
000	$\times \checkmark$								
Ħ		Revenue 💌	Product cost	Product plan 💌	Branch expe	ense plan 💌	Quantity sold	Unit cost 💌	Gro
	4340	122888.25	49425.32	17632.39257359			25217	1.96	
鲳	4341	131721.45	53021.92	18731.37141865			27052	1.96	
	4342	139216.45	56506.8	19186.60748764			28830	1.96	
	4343	135192.55	54499.76	18462.21307812			27806	1.96	
	4344	120143.55	48504.12	16898.69700112			24747	1.96	
	4345	43300	16973.6	5913.81305308			8660	1.96	
	4346	37545	14717.64	4487.05768334			7509	1.96	
	4347	30480	11948.16	4183.9224558			6096	1.96	

Creating Relationships

Power BI requires relationships between tables, but Cognos typically does not present primary key and foreign keys at the business user view.

The Analytics Connector injects **AAA_LINK** columns into the tables so you can build relationships between them even when there are no PK/FK columns. The Analytics Connector ignores joins formed by **AAA_LINK** columns when passing queries to Cognos for execution.

NOTE: It is very important that you create the relationships as described so that Power BI sends the appropriate queries to Cognos!

Join DirectQuery Tables

When joining DirectQuery tables, always use **AAA_LINK** columns because you want to let Cognos decide the correct relationship. Even when you do have business PK/FK columns, please still join them by **AAA_LINK** columns as this will guarantee correct results and better performance.

Start by dragging the **AAA_LINK** column in the fact table to the **AAA_LINK** table in the dimension table.



In the Create Relationship dialog, make sure the cardinality is set Many to one (*:1).

Check the box next to Assume referential integrity.

Click OK.

Hint: You don't have to wait for Power BI to populate preview contents before clicking the OK button. If Power BI shows an error dialog because it hasn't finished probing the tables yet, you can simply dismiss and ignore the error, as Power BI will create relationships as you specified anyway.

Sales						*				
AAA_LINI	(Quantity	Unit cost	Unit pri	ce	Unit sale price	Revenue	Product cost	Gross profit	Pla
	1	146	40.45		85	85	12410	5905.7	6504	3
	2	8	42.73		89 .3	89.3	714.4	341.84	372.5	56
	3	23	41.36		73	73	1679	951.28	727.3	72
<										>
	1	4	40 55 Rue Ro	othschild	55 Ru	e Rothschild	,	null	null	Genè
	2		39 Jedleser S	traße 7	Jedle	ser Straße 7		null	null	Wien
	3	į	88 Interleuve	enlaan 2	Interl	euvenlaan 2	1	null	null	Hever
<										>
Cardinalit	v					Cross filter	direction			
Many to	one	(*:1)				▼ Both				-

Repeat these steps until the fact table has relationships to all dimension tables.

If you have multiple fact tables, chain these fact tables based on granularity and link the highest level fact table to dimension tables, as shown in the diagram below.



After creating relationships, change to the Report view and create your report.

Join Import Tables

When joining import tables, always use your business PK/FK columns. Using **AAA_LINK** to join import tables will yield incorrect results. Why? Because once the table/query data is loaded into Power BI, they are stored as different tables within Power BI. If you join tables by **AAA_LINK** (which are simply sequential numbers in each table/query), the numbers will be wong.

Join DirectQuery and Import Tables

When joining between DirectQuery and Import tables, always use your business PK/FK columns too. Power BI will query DirectQuery first then join the result to the import table using the relationship you defined, so these relationships must be joined by business PK/FK columns.

Join Tables without Key Columns

What if your table does not have business PK/FK columns and you still need to join it with an import table, or this table itself is an import table? You can borrow ones from other tables using a query.

You can import a query, and "borrow" FK columns from other tables by using a select statement like below:

```
select p."Product",
y."Month",
sum(m."Quantity sold") as "Quantity sold",
sum(m."Revenue") as "Revenue",
sum(m."Product cost") as "Product cost",
sum(m."Gross profit") as "Gross profit",
sum(m."Sales target") as "Sales garget"
from "great_outdoors_sales_en"."Measures" as m
join "great_outdoors_sales_en"."Products" as p on (m.AAA_LINK = p.AAA_LINK)
join "great_outdoors_sales_en"."Years" as y on (m.AAA_LINK = y.AAA_LINK)
where y."Year" = '2010'
group by p."Product",
y."Month"
```

Then you can join this query to other import tables like below:



Cognos Parameterized Tables and Reports

You cannot use parameterized tables (mapped from Cognos parameterized query subjects) or report mapped tables as regular tables. Power BI will not be able to import them if you select any parameterized tables or report tables:



When using parameterized query subjects in a Cognos report, or executing a pre-defined Cognos report with prompts, users will be prompted to enter parameter values but you cannot provide parameter values in Power BI for regular database tables.

The answer is to write custom SQL and use **OpenTable** and **RunReport** functions to feed parameter values to Cognos.

Working with Parameterized Tables

The Analytics Connector supports working with parameterized tables in Power BI by using the OpenTable function, which lets you pass parameter values to Cognos.

Example:

```
select p."Product line", p."Product type", sum(s.Revenue) as Revenue,
sum(s.Quantity) as Qantity
from
    OpenTable (
       "Sales (query)"."Parameterized Products",
       "p_product line code"="[991, 992, 993, 994, 995]",
       "p_Product Line"="'Golf Equipment'",
       "p_Date"="{d '2010-01-01'}",
       "p_Datetime"="'2010-01-01 19:00:00'"
    ) as p
    join "Sales (query)"."Sales" as s on (p.AAA_LINK = s.AAA_LINK)
group by p."Product line", p."Product type"
```

Instead of selecting from a table directly, you use the OpenTable function (a tabular function) to invoke the parameterized table and join it to other tables. The first parameter "schema name"."table name" is the Cognos table name. This is followed by zero or more Cognos parameter name-value pairs separated by commas. For more information, please refer to Function Syntax.

To begin, open Power BI Desktop and select **Get Data -> SQL Server** from the ribbon. "SQL Server database" dialog pops up.

In Server input box, Type in hostname of IP of Analytics Connector server.

In **Database (optional)** input box, type in database name given by your Analytics Connector administrator when he/she has mapped a Cognos package or data module to it. Please note, Database is mandatory in this case.

Check DirectQuery and (optionally) check "Navigate using full hierarchy".

Expend "Advanced options", put custom SQL in "SQL Statement (optional, requires database)" box.

Click OK.

Server ()	
localhost	
Database (optional)	
GO Sales (query)	
Data Connectivity mode 🕕	
O Import	
 DirectQuery 	
Advanced options	
Command timeout in minutes (optional)	
SQL statement (optional, requires database)	
	(a Devenue) as Devenue aver(a Overstitu) as Orati
<pre>select p."Product line", p."Product type", sum from</pre>	(s.kevenue) as kevenue, sum(s.Quantity) as gant.
<pre>select p."Product line", p."Product type", sum from OpenTable ("Sales (query)"."Parameterized Products", "Sales (query)"."Parameterized Products",</pre>	(s. Revenue) as Revenue, sum(s. Quantity) as gant.
<pre>select p."Product line", p."Product type", sum from OpenTable ("Sales (query)"."Parameterized Products", "p_product line code"="[991, 992, 993, 994 </pre>	, 995]",
<pre>select p."Product line", p."Product type", sum from OpenTable ("Sales (query)"."Parameterized Products", "p_product line code"="[991, 992, 993, 994 </pre>	, 995]",
<pre>select p."Product line", p."Product type", sum from OpenTable (</pre>	, 995]",
<pre>select p."Product line", p."Product type", sum from OpenTable ("Sales (query)"."Parameterized Products", "p_product line code"="[991, 992, 993, 994 Include relationship columns Navigate using full hierarchy Enable SQL Server Failover support</pre>	, 995]",

A data preview window will display. Click Load.

Product line	Product type	Revenue	Qantity		
Golf Equipment	Golf Accessories	51514343.88	3119747		
Golf Equipment	Irons	254814338	391445		
Golf Equipment	Putters	106184271.4	1284570		
Golf Equipment	Woods	313898414.7	317939		

You can now use the columns from the **Fields** tab to build the report.

۵	9 0	Untitled - Pow	er Bl Desktop	Xueso	ng Gao 🌔	- 0	×
File Paste Clipbo	9 € Home Inser Image: Get Image: Excel Image: Excel Image: Excel Image: Excel Image: Excel Image: Excel Image: Excel </td <td>Untitled - Pow t Modeling tr Bl datasets & ~ Server Data Qantity Reven 5113701 726,4</td> <td>er BI Desktop View Help Transform data Refresh Queries $\uparrow \downarrow \downarrow \downarrow \downarrow$</td> <td>Vueso Format C New visual I Text box More visual Insert V ···· < I I I I I I I I I I I I I</td> <td>ng Gao Obata / Drill Obata / Drill I I I I I I I I I I I I I I I I I I</td> <td>- C</td> <td>×</td>	Untitled - Pow t Modeling tr Bl datasets & ~ Server Data Qantity Reven 5113701 726,4	er BI Desktop View Help Transform data Refresh Queries $\uparrow \downarrow \downarrow \downarrow \downarrow$	Vueso Format C New visual I Text box More visual Insert V ···· < I I I I I I I I I I I I I	ng Gao Obata / Drill Obata / Drill I I I I I I I I I I I I I I I I I I	- C	×
Dage 1	Golf Accessories Irons Putters Woods Total	3119747 51, 391445 254,8 1284570 106,1 317939 313,6 5113701 726,4	514,343.88 514,337.99 884,271.37 598,414.65 11,367.89	Brs Stress	ations	Product line Product type Σ Qantity Σ Revenue	

Working with Reports

The Analytics Connector supports working with Cognos reports in Power BI by using the RunReport function, which lets you pass parameter values to a Cognos report.

The Analytics Connector only supports list style Cognos reports, not crosstabs or charts.

Example:

```
Select *
From
    RunReport (
        "Connector Reports"."Parameter Report",
        "p_product line code"="[991,992,993,994,995]",
        "p_Product Line"="'Golf Equipment'",
        "p_Date"="'2010-01-01'",
        "p_Datetime"="2010-02-01 19:00:00"
) as "Report"
```

The first parameter "schema name". "report name" is the Cognos report. This is followed by zero or more Cognos parameter name-value pairs separated by commas. For more information of about RunReport function, please refer to Function Syntax.

To begin, open Power BI Desktop and select **Get Data -> SQL Server** from the ribbon. "SQL Server database" dialog pops up.

In Server input box, Type in hostname of IP of Analytics Connector server.

In **Database (optional)** input box, type in database name given by your Analytics Connector administrator when he/she mapped a Cognos package or data module to it. Please note, Database is mendentary in this case.

Check DirectQuery and (optionally) check "Navigate using full hierarchy".

Expend "Advanced options", put custom SQL in "SQL Statement (optional, requires database)" box.

Click OK.

erver ()	
localhost	
Database (optional)	
GO Sales (query)	
Data Connectivity mode ①	
O Import	
 DirectQuery 	
Advanced options	
Command timeout in minutes (optional)	
QL statement (optional, requires database)	
Select *	~
RunReport (
"Connector Reports"."Parameter Report", "n product line code"="[991 992 993 994 995]"	
"p_Product Line"="'Golf Equipment'",	~
Include relationship columns	
Navigate using full hierarchy	
Enable SQL Server Failover support	

A data preview window will display. Click Load.

Product line code	Product line	Product type code	Product type	Year	Revenue	
995	Golf Equipment	968	Irons	2010	4654281.1	
995	Golf Equipment	969	Woods	2010	5138304.03	
995	Golf Equipment	970	Putters	2010	2459044	
995	Golf Equipment	971	Golf Accessories	2010	864227.83	
995	Golf Equipment	971	Golf Accessories	2010	864227.83	

You can now use the columns from the **Fields** tab to build the report.

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File	Home Inser	t Modeling	View He	elp	Forma	:	Data / Drill			
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	Product line	2010	Total			/isu	2º Sea	cn		
	Golf Equipment	13,115,856.96	13,115,856.96		lite	aliz	_ ■ Qu	ery1		
	Golf Accessories	864,227.83	864,227.83		SIS	ati		·		
	Irons	4,654,281.10	4,654,281.10			on	<u>~</u>	Produ	ct line	
	Putters	2,459,044.00	2,459,044.00			^o	_ Σ	Produ	ct line code	
	Woods	5,138,304.03	5,138,304.03				<u>~</u>	Produ	ct type	
	Total	13,115,856.96	13,115,856.96				ΩΣ	Produ	ct type code	
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Page 1	of 1					Stor	age Mode: D	irectQu	ery (click to	change)

Working with Power BI Parameters

In your Power BI ODBC queries, you can replace the static values with Power BI parameters to create dynamic values that can be easily changed.



After configuring a Parameterized Table or Report query, click **Edit Queries** to bring up the Power Query Editor.

Click Manage Parameters to display the Parameters dialog.

Create a new parameter.

	New	Name
Start_Date	\times	Start_Date
		Description
		Start date to pass to the parameterized table
		✓ Required
		Туре
		Date *
		Suggested Values
		Any value *
		Current Value
		1/1/2010

Next, edit the query to include the parameter in the SQL statement. You may need to format non-text data types using M language functions in order to append them to the statement.

The below example formats a date parameter to text and appends it to the SQL statement.

Queries [2] 🛛 <	×	~	f _x	= Odbc.Query("dsn=Senturus Colo .45", "Select * From (#(lf)OpenTable(#(lf) ""Sales (query)"".""Parameterized Products"", #(lf) ""p_product line code""=""[991, 992, 993, 994, 995]"", #
🔺 Query1				<pre>(1f) ""p_Product Line""=""'Golf Equipment'",#(1f) ""p_Date"="""' & Date.ToText(Start_Date, "yyyy-WM- dd") & "'"", #(1f) ""p_Datetime"="''2010-01-01 19:00:00'""#(1f))#(1f)) as ""Parameterized Table""")</pre>
🚆 Start_Date (12/1/2				

NOTE: Double quotes must be escaped by using two sets of double quotes.



To change the Parameter value(s), select *Edit Parameters* under **Edit Queries**.



The Enter Parameters dialog will display with a list of configured parameters and their values.

Fill in new values and click **OK**.

		×
Enter Parameters		
Start_Date 🛈		
12/31/2009		
	OK Cancel	

Click Apply Changes if the data does not refresh.



Function Syntax

Both OpenTable and RunReport functions use the same syntax.

Syntax

Both OpenTable and RunReport function use the following syntax: OpenTable ("Schema Name"."Table/Report Name"(, "Parameter"="value", ...))

The first parameter is a table identifier, using standard SQL syntax. All identifiers are case insensitive and the schema name can be omitted if the table name is unique across schemas.

Any additional parameters should be defined as name-value pairs, separated by commas. Name and values should be surrounded by double quotation marks.

Parameters

Use parameter name in place of "Parameter" for the Cognos connector.

Values

All values should follow the SQL/ODBC standard.

Only plain string representation is allowed for numeric values. Formatted representations such as **1,200.00** with thousand separators, **(15)** for -15, or **50%** for .5 are not supported.

For string values, single quotation marks are used around the value. For example, 'Golf Equipment' or 'Sam''s Club'.

For date/time/timestamp values, use the ODBC standard format. For example {d '2010-01-01'} or ISO 8601 standard format, 'YYYY-MM-DD' for date, 'hh:mm:ss' for time and 'YYYY-MM-DD hh:mm:ss' for timestamp.

An array of values is passed using brackets. For example:

• "product line code"="[991,992,993,994,995]"

The syntax for a Range parameters is represented by a 2 element array. For example:

- "YearRange"="[,2019]" All years less than or equal to 2019
- "YearRange"="[2015,]" All years greater than or equal to 2015
- "YearRange"="[2015,2019]" Years between 2015 and 2019

Character escaping

Certain characters must be escaped.

For single quotes within a string value, use two single quotes to escape a single quote inside the string.

Double quotes in parameter name and values need to be escaped with two double quotes.

Passing multiple values to a parameter

A Cognos parameter may accept multiple values, for example [Product line code] in (?p_Product line code?). To specify multiple values in your function, put multiple values in a pair of square brackets ([]) and separate each value by a comma (,) just like CSV format.

Publish to powerbi.com

After creating a Power BI report, you can publish it to powerbi.com and share it with others. Simply click on Publish button and select a destination you want to publish.

In order to allow powerbi.com access to your on-premises data, you need to install and configure Power BI Gateway. If you use the custom connector in your Power BI report, you need to install Senturus Analytics Connector client on the computer where Power BI Gateway is running and copy custom connector file to it. For more information, please refer to *Senturus Analytics Connector Installation Guide*.

To publish a Power BI report from Desktop to powerbi.com, follow steps below:

1. Connect to the Senturus Analytics Connector server using SQL Server database connection or custom data connector.

- Server ①			
internal-bi1			
Database (optional)			
GO Sales (analysis)			
Data Connectivity mode 🕕			
O Import			
 DirectQuery 			
Advanced options			
·			
		OK	Cancel
Senturus Analytics Connector			
Senturus Analytics Connector			
Senturus Analytics Connector			
Senturus Analytics Connector Server © internal-bi1 Port ©			
Senturus Analytics Connector Server © Internal-bi1 Port © 5432			
Senturus Analytics Connector Server © Internal-bi1 Port © 5432 Database ©			
Senturus Analytics Connector Server ① Internal-bi1 Port ① 5432 Database ① GO Sales (analysis)]		
Senturus Analytics Connector Server ① Internal-bi1 Port ① 5432 Database ① GO Sales (analysis) Data Connectivity mode ①]		
Senturus Analytics Connector Server ① internal-bi1 Port ① 5432 Database ① GO Sales (analysis) Data Connectivity mode ① Q Import]		
Senturus Analytics Connector Server ① internal-bi1 Port ① 5432 Database ① GO Sales (analysis) Data Connectivity mode ① O Import @ DirectQuery]		
Senturus Analytics Connector Server ① Internal-bi1 Port ① 5432 Database ① GO Sales (analysis) Data Connectivity mode ① O Import ● DirectQuery]		

2. Create your visualization, save Power BI report, click Publish button.

3. Select a destination and click on Select.

Publish to Power	BI	\times
Select a destination		
Search		
My workspace	^	
Cognos Report Insights		
Intranet		
MWD Senturus		
Senturus Analytics for Salesford	te 🗸 🗸	
T		
	Select Cancel	

4. Click on "Open 'your report name.pbix' Power BI" in the success dialog:



5. You will see an error if you did not setup a gateway using the same connection settings you entered in step 1 before.



6. Go to the workspace, hover over your mouse right to the newly created data set, and click on "More options" button, then "Settings":

🛄 Learn		E .	AC_as_SQL Kerberos			Sec	rity
	<u> </u>	8	GO Sales (query)			Rena	ame
Workspaces My workspace	~	8	GO Sales (query) - SQL - Basic Aut	h		Setti	ings
		8	GO Sales (query) data connector p	ostgre	s	Dow Man	nload the .pbix
		8	RunReport			View	/ lineage
		8	^{اد} Sales (analysis)	Ö	51	:	Dataset
		8	Sales (query)				Dataset

7. Click on the arrow button under the Actions column and click on "Manually add to gateway". If you added a data source using the same connection settings, you will see a drop-down list of data sources instead of "Manually add to gateway" button. In that case, you can select a data source for your dataset without creating a new data source.

▲ One or more cloud data sources for this dataset have been deleted. <u>Recreate cloud data sources</u>	
<u>Refresh history</u>	
►Dataset description	
Gateway connection	
To use a data gateway, make sure the computer is online and the data source is added in <u>b</u> gateway (standard mode), please select the corresponding data sources and then click app	<u>vlanage Gateways</u> . If you're using an On-premises data »ly.
Use an On-premises or VNet data gateway	
Use an On-premises or VNet data gateway Off	
Use an On-premises or VNet data gateway Gateway Contact information C	tion Status Actions
Use an On-premises or VNet data gateway	tion Status Actions
Use an On-premises or VNet data gateway	tion Status Actions

8. Now you can create a data source under a particular gateway.

If you are using the SQL Server connector in your report, you can create data sources just like you do for other SQL server data source except that you have to pick Basic "Authentication method".

Here is an example:

Data	Source	Settings	Users

Data Source Name
GO Sales (analysis)
Data Source Type
SQL Server 🗸
Server
internal-bi
Database
Sales (analysis)
Authentication Method
Basic 🗸
The credentials are encrypted using the key stored on-premises on the gateway server. <u>Learn more</u> Username
cognosembed@senturus.com
Password
Skip Test Connection
>Advanced settings
Add Discard

If you are using the custom connector, you need to select "Senturus Analytics Connector" from the Data Source Type list. Here is an example

Data	Source	Settings	Users
Dutu	Jource	Jettings	05015

Data Source Name
GO Sales (analysis)
Data Source Type
Senturus Analytics Connector
Server
internal-bi1
Port
5432
Database
βales (analysis)
The credentials are encrypted using the key stored on-premises on the gateway server. Learn more
Username
cognosembed@senturus.com
Password
Skip Test Connection
>Advanced settings
Add Discard

Please note, you need to type in the exact server, port and database here as you have in Power BI Desktop (case sensitive). Please refer to step 1.

9. After creating data source, go back to data set settings, map the data source and click on Apply.

Settings for Sales (analysis)

▲ One or more cloud data <u>Recreate cloud data sou</u>	sources for this dataset ha	ave been deleted.			
<u>Refresh history</u> ▶Dataset description					
 Gateway connection To use a data gateway, make su gateway (standard mode), pleas 	re the computer is online and t is select the corresponding dat	he data source is added in <u>Manage</u> a sources and then click apply.	<u>Gateways</u> . If you're	using an On-premises data	a
On On	er data gaterray				
On Gateway	Department	Contact information	Status	Actio	ns
 On Gateway Gateway 	Department	Contact information	Status	Action	ns •
On Gateway On Gateway Data sources included	Department	Contact information	Status	Action	ns •
On Gateway On Gateway Data sources included Extension("extensi i1\",\"port\":\"543	Department in this dataset: sionDataSourceKind":"Sent onDataSourcePath":"{\"sen 32\".\"database\":\"GO Sale	Contact information xgao@senturus.com urusAnalyticsCo ver\":\"internal-b es (analysis)\"}"} GO Sale	Status	Action	ns •

10. Finally, you can open your report and/or create new reports with your dataset.

Contact Us

The latest version of the Analytics Connector along with related documentation and contact information can be found at https://www.senturus.net/connector-download/.

If you have any additional questions, please contact us at <u>CustomerSupport@senturus.com</u>.