BU Information Services & Technology

SAP HANA Views and Power BI – Connecting, Selecting and Loading Data

Description

This Help Guide describes how to perform multiple steps that enable you to load data from one or more HANA Views into Power BI. The steps include determining which View(s) to use, how to identify individual data fields to load and, finally, how to load selected data into your Power BI application.

The Guide assumes you have been assigned the **SAP Report Writer** security role. If you do not yet have that role, submit an assignment request using the form on this web page. Once the role has been assigned, you can connect to the HANA Database and access any View for which you have the necessary security permissions.

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View Index File

The HANA View Index contains a list of published Views. The list includes a description of each view as well as the associated business area, technical name, and Power BI technical path.

Important: Keep in mind that access to Views is limited by a user's SAP security permissions, so some of the Views listed in the View Index may not be available to you.

Identify the View(s) to Use

One easy way to determine which View(s) to use for a report/dashboard is with the help of a BW report. Here's an example:

Suppose you want to develop a report/dashboard based on FM Budget and Actual data. Either of the two *Unrestricted Budget to Actual* reports in the Funds Management (Distributed) folder use this data source. Based on this knowledge, here are the steps to follow to determine which HANA View to use:

1. Run the **Unrestricted Budget to Actual by Funds Center** report

2. Press the **Info** button

3. Note the *InfoProvider Technical Name*. This corresponds to the HANA View you will use.
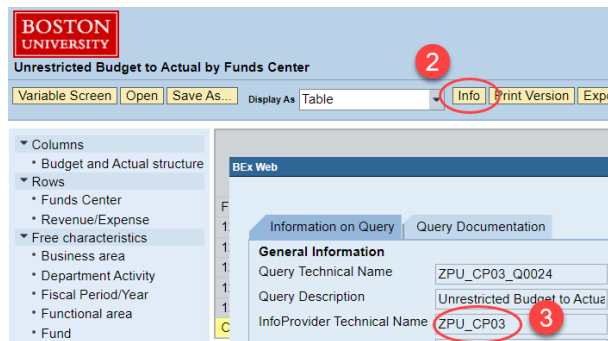
4. Open the HANA View Index and search for *ZPU_CP03*.

5. Here's the result of the search:

HANA View Tech Name	Description	Business Purpose of the View	Technical Path of the HANA View in Power BI
ZPU_CP03_V01	FMBCS Budgets, Commitments, Expenses HANA View	Contents: summary of account postings against current UNRESTRICTED budget; commitment item by Fund Center for a specified fiscal period, fiscal year to date, previous year period and previous year to date	Reporting.Accounting_FI.Funds_Management_Distributed/ZPU_CP03_V01
ZPU_CP04_V01	Actual expenditures with PY Detail HANA View	FM Transactional Details with Payroll Details Contents: transaction details for Actuals & Commitments; includes payroll details	Reporting.Accounting_FI.Funds_Management_Distributed_Authorised_Users/ZPU_CP04_V01
		FM Transactional Details without Payroll Details Contents: transaction details for Actuals & Commitments; does not	

Tip: Note the **Technical Path**. this will be useful in finding the View when browsing the contents of the SAP HANA database.

Choose which data to load – Detailed Design Documents

The Detailed Design Documents describe the contents of each View. In the previous example for **ZPU_CP03_V01**, note that the *HANA View Technical Name* column contains a link. Clicking on the link will open the associated detail document that contains a list of the View's data fields. Here's a sample:

Field Tech Name	Field Description	Field Definition	Avail	Sample Data
0AC_DOC_TYP	Document type	Classification of type of activity that generated the revenue/expense posting. Some of the more commonly used Document Types at BU are: Student Accounts, Payroll, P. Card, Invoice - Gross, and G/L Account Document. [Key]	Availa	Y2
0AC_DOC_TYP___T	Text column for attribute 0AC_DOC_TYP	Classification of type of activity that generated the	Availa	Payroll Posting

Field Tech Name is the technical name of the field listed in Power BI

Field Description is the field name

Field Definition describes the data the field contains

Available is for internal use and indicates whether a field is visible within the View

Sample Data displays an example of the field's contents

Browse the fields in the detailed design document for the View you will use and develop a list of fields to be loaded.

Tip: make a note of both the **Field Tech Name** and the **Field Description** for each field you will select. As described in **Use Power BI to Load Data**, **Field Tech Name** is useful in distinguishing between data fields with similar or identical names.

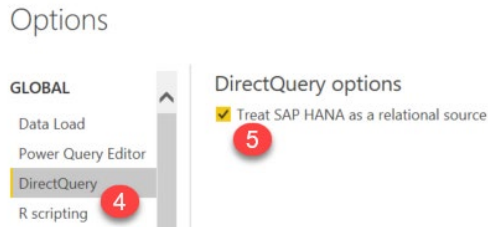## Set Power BI Option to Allow Browsing at Field Level (One Time Only)

Once you have identified both the View and the data fields you need for your report, you are *almost* ready to begin loading data. However, following the steps in this one-time procedure will enable you to see all individual data fields within a View when browsing via Power BI.

Open Power BI desktop and:

1. Click **File**
2. Select **Options and Settings**
3. Then click **Options**
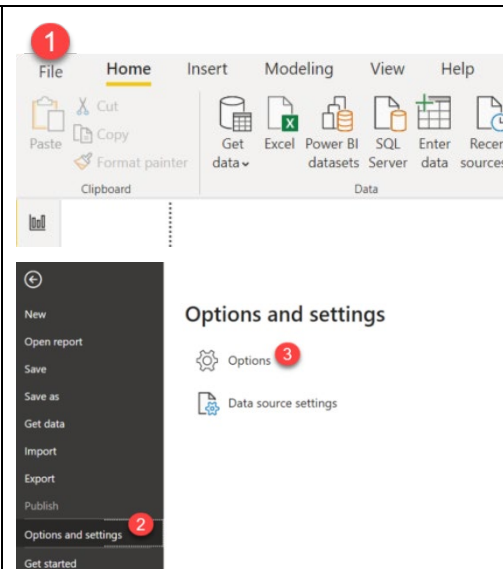
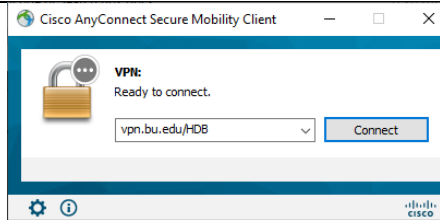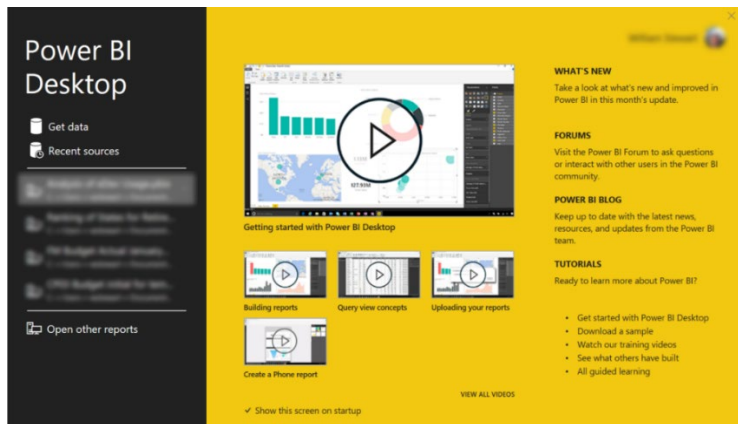|	
4. Select **DirectQuery** 5. Check **Treat SAP HANA as a relational source**	Options GLOBAL DirectQuery options Data Load ☑ Treat SAP HANA as a relational source Power Query Editor **5** DirectQuery **4** R scripting

Connecting to the HANA Database

First Time: Using *Get Data*

This section describes the steps to follow the first time you connect to the SAP HANA database. When connecting in the future, refer to the section **Connecting to the HANA Database: Using *Recent Sources*.**

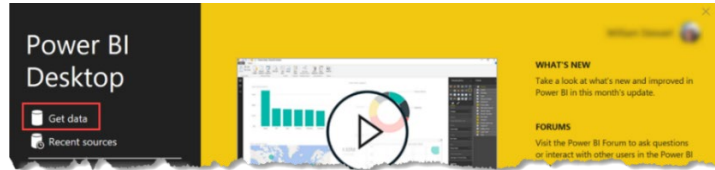|	
Login to the HDB VPN using your Kerberos ID and password and two-step DUO authentication.	Cisco AnyConnect Secure Mobility Client — ☐ ✕ VPN: Ready to connect. vpn.bu.edu/HDB ⌄ [Connect] ⚙ ⓘ cisco
Start Power BI Desktop and you will see a landing page like this (or the one described in the next panel). **Tip**: this page contains links to several informative "Getting Started" videos. These are useful for anyone attempting to become familiar with Power BI.	
Alternatively, you may see a blank page like this on startup.	
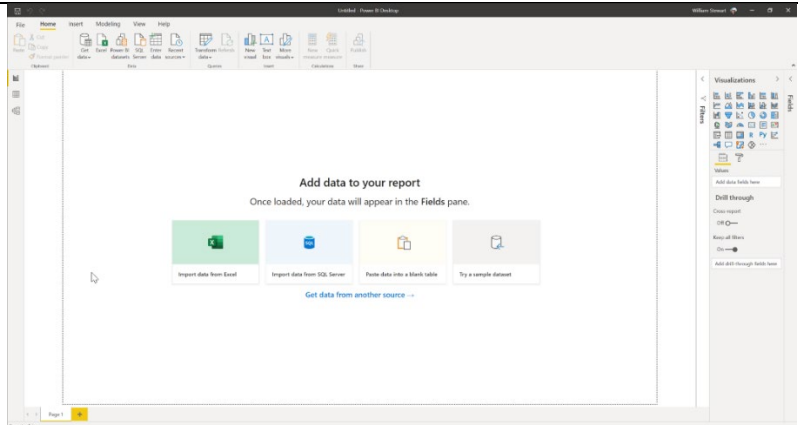
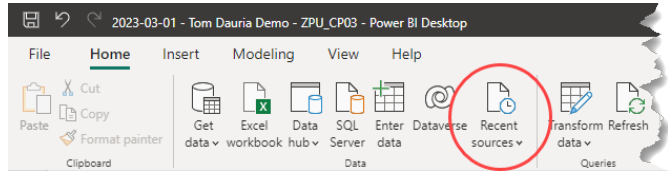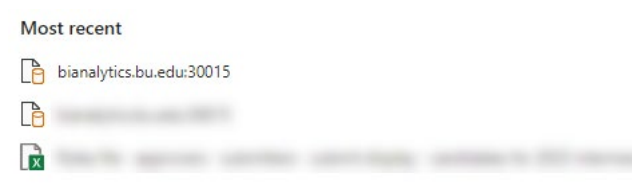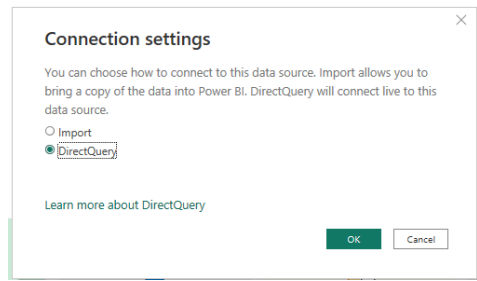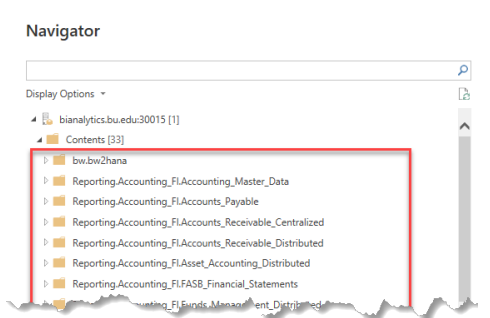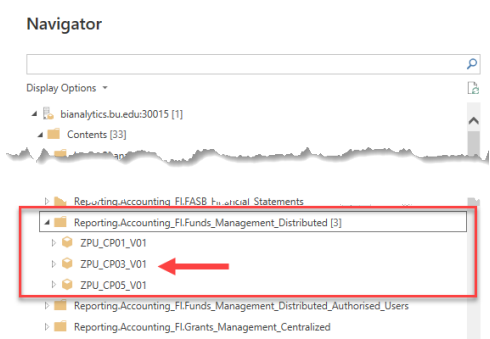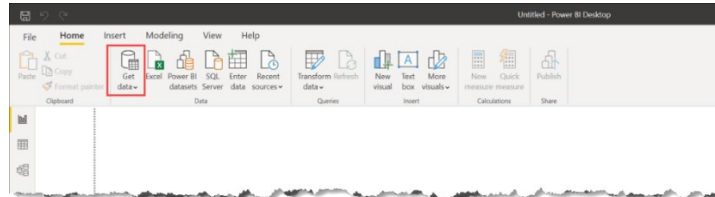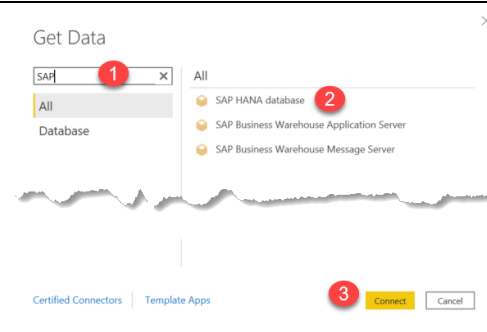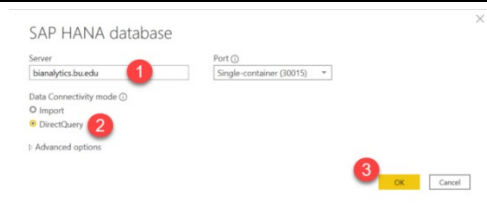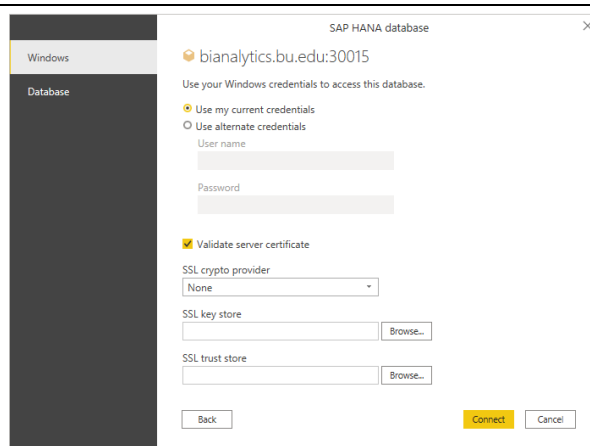|	
Important! To enable viewing a list of all data fields contained within a HANA View – as shown in the following example – you must first complete the <u>one-time steps</u> described above in **Set Power BI Option to Allow Browsing at Field Level**.	
Regardless of which initial window you see, click on the **Get Data** option Tip: If you have connected to the HANA database previously, you can use the *Recent Sources* icon, as described here: **Connecting to the HANA Database: Using *Recent Sources***.	Here: Or here:
1. Use the text search box to search for SAP data sources 2. Choose *SAP HANA Database* from the list 3. Click **Connect**	
Enter the details of the SAP HANA Database: 1. Server: **bianalytics.bu.edu** 2. Select **DirectQuery** mode 3. Click **OK**	
Select the option to *use my current windows credentials* and click **Connect**. Tip: If this is the first time you have connected to the database, you may be prompted to accept single sign on credentials	
If following these steps was your first time connecting to the HANA database, skip to **Use Power BI to Load Data**.	

Using *Recent Sources*

Open the Power BI desktop and select *Recent Sources* (this assumes you have previously followed the steps outlined in **Connecting to the HANA Database: First Time Using *Get Data***).	
Select **bianalytics.bu.edu**	**Most recent** bianalytics.bu.edu:30015
Select *DirectQuery*	**Connection settings** You can choose how to connect to this data source. Import allows you to bring a copy of the data into Power BI. DirectQuery will connect live to this data source. ○ Import ● DirectQuery Learn more about DirectQuery OK Cancel

Use Power BI to Load Data

Regardless of how you connected to the HANA database, via *get data* or *recent sources*, you are now ready to load data.
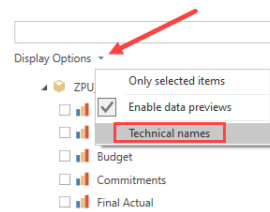
Expand **Contents** to display the folders containing the SAP HANA Views to which you have access. Tip: the folder names correspond to the **Technical Path of the HANA View in Power BI** column in the HANA View Index file.	
Expand the folder that contains the HANA View you will use and select the data fields to be included in your report or dashboard. ZPU_CP03_V01 is the View in the example in **Choose which HANA View to use** above.	
Tip: Some data fields have similar or identical names. One way to avoid confusion due to this is by using field technical names to help distinguish one field from another. If you made a note of both the **Field Tech Name** and the **Field Description** during data selection, as suggested in the **Detailed Design Documents** section, you can use the Tech Name to avoid confusion.	

|	
Enable Technical Names Click the **Display Options** drop down and select *Technical names.* Now, both the **Field Description** and the **Field Tech Name** will be visible and can be used to identify the data you need. The technical name of each data field will be displayed adjacent to the field name, as the highlighted element in the next panel shows.	
Click to expand the View contents and select data to include in your report / dashboard. Tip: the highlighted search box (just below the Navigator heading) is useful when searching for data fields once a View has been expanded.	
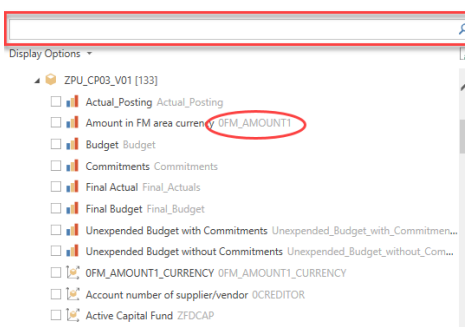
Important: during the early stages of development we recommend that you limit the volume of data you select. Once you have satisfied yourself that your report/dashboard is working as expected, you can remove any limitations you applied.

Appendix C outlines steps to follow to avoid a system problem when loading too much data. Please familiarize yourself with these simple procedures.

Press **Transform** to apply filters when data selection is complete. This will enable you to apply filters during initial development.	
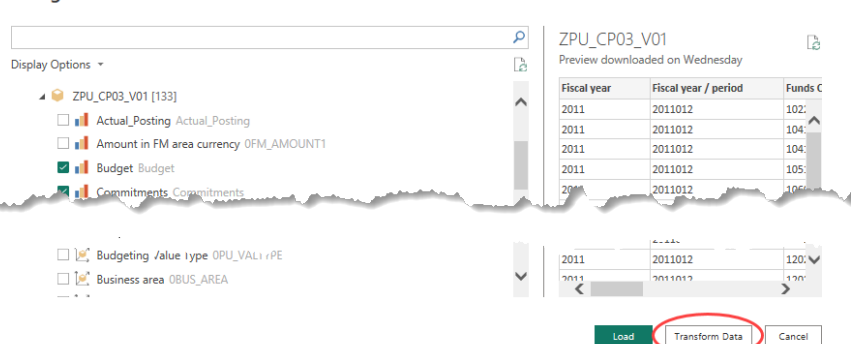
[**Appendices follow**]

Learn and use Power BI

When you have established a connection to the HANA database and loaded your data, use Power BI to build the reports and dashboards you will use to analyze that data. There are a tremendous number of resources available to help you with the task of learning Power BI. A good place to start is this Techweb page. Several good resources are also listed on the Power BI & HANA View Techweb page.
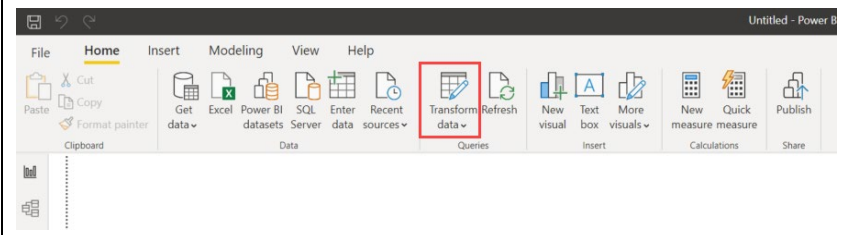
Share a Report/Dashboard

Once you have developed a report or dashboard, a logical next step is to determine how best to share those results. The Power BI Best Practices document, published on the BU Power BI Community Teams site, provides an overview of sharing options (refer to **Sharing Reports at BU**).

Consider Security

When deciding *how* sharing will be accomplished, careful thought must also be given to *what* will be shared and *with whom*. The Best Practices **Security Considerations** section includes a look at what to keep in mind regarding data security.
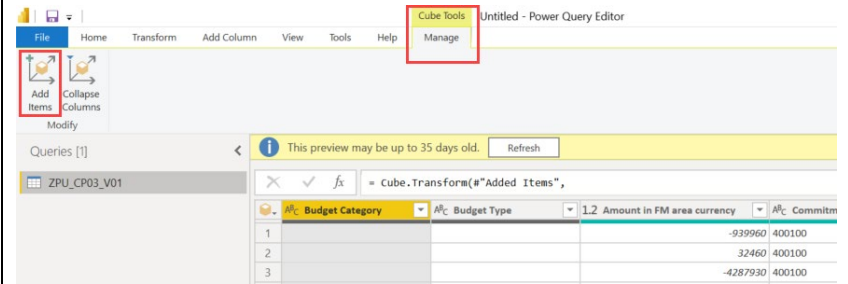
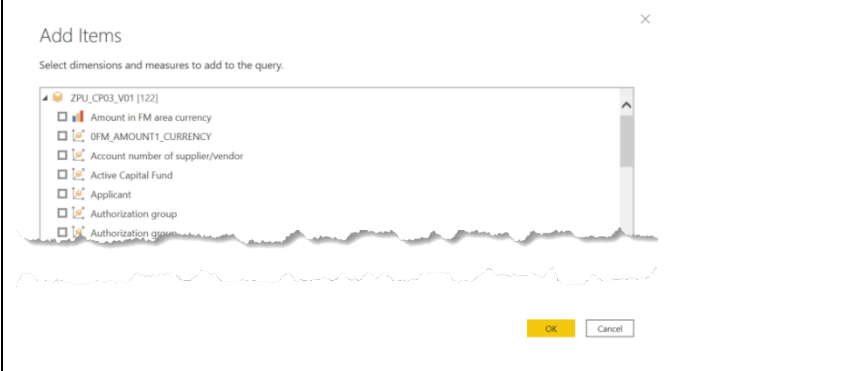|	
If you discover that you need to add more data to that already loaded, begin by clicking the **Transform data** button[1]. This opens the Query Editor window.	
Select **Manage** (under **Cube Tools**) Click the **Add Items** icon	
Select the fields to be added and click **OK** when your selection is complete.	
Then select the **Home** tab and click the **Close & Apply** icon to close the Query editor window and return to the Power BI Desktop.	

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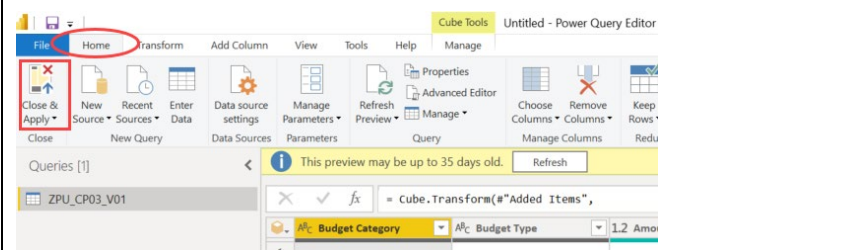
[1] As is true of many software applications, Power BI typically offers multiple means to accomplish a task. This description is one way to load additional data.

Appendix C –Avoid Overloading the Business Warehouse

We want to outline a few important steps that all report writers should follow to avoid overloading the system. These steps are especially important for the early stages of development when proofing a concept. Once you have a solution working, add more fields or remove filters to allow loading more data as appropriate.

- **Start with a minimal dataset**
    - Don't load *all* data in a View. Instead, select the minimal set of fields you need to proof your project concept.

- **Apply filters**
    - Before adding any visualization, go to **Transform data** (open the Query Editor) and add filters to reduce the amount of data to be loaded. For example, add a filter on **Fiscal Year** to select only a year or two of data or choose a minimal set of business units. This will ensure that you are only pulling the data you need and will facilitate faster development.

- **Use care when applying table joins**
    - When connecting two HANA Views/Datasets, please make sure you are using the correct join to avoid data explosion.