Power BI Desktop: New Data Connectivity Features

# **Summary**

The purpose of this document is to serve as supporting reference to new data connectivity features added to the Power BI Desktop application. Power BI Desktop is a free business intelligence design and development application containing rich capabilities in data connectivity, transformation, modeling, and report/dashboard development. Business intelligence artifacts created within Power BI Desktop such as datasets and reports can be published to the Power BI Service and consumed by Power BI users.

* New features and enhancements related to data modeling, transformations, report authoring and other Power BI Desktop and Service features are outside the scope of this document.
* The official Power BI Documentation Update Archive is maintained here: <http://bit.ly/2t6fRUE>
* This document will be updated with future Power BI data connectivity updates (e.g. Oct 2018 Update).
  + As of 9/13/18, this document only identifies new data connectivity features and improvements since the September 2015 update.

# **Monthly Update Links**

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# **Feature Updates**

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| --- | --- | --- | --- | --- |
| **#** | **Feature/Improvement** | **Detail** | **Image** | **Update Month** |
| 1 | On-Prem Spark distributions | * Get Data – Other   + Connect * URL of Spark Server and Protocal (Standard or HTTP) |  | Sep-2015 |
| 2 | SharePoint lists from non-English sites | * Improvement of existing SharePoint list connector * Users can get data from any SP list as long as SharePoint 2013 or newer regardless of site language * SP 2010 and earlier sites still limited to English only |  | Sep-2015 |
| 3 | MS Exchange connector | * Now allowing connections to multiple mailboxes * Could specify email address and credentials; could combine data from multiple Exchange inboxes |  | Sep-2015 |
| 4 | Excel Connector | * Automatic Column Type detections when importing.XLS files * Previously had column type detection for XLSX (Excel 07+) only |  | Sep-2015 |
| 5 | Related Tables option when connecting to database sources | * Similar feature available in Power Pivot for Excel * Tables with relationships defined in SSAS or via PK/FK in relational SQL Server * Feature supported in:   + SQL Server   + SQL Azure   + Oracle   + DB2   + MySQL   + Postrgres   + Teradata |  | Sep-2015 |
| 6 | Enhanced Active Directory connector credentials | * Allows alternate Windows credentials * Can impersonate now when writing queries against AD |  | Sep-2015 |
| 7 | Improved function invocation experience when using functions against a source | * Will be prompted for all parameters needed for query * Previously had to go back and specify function parameters |  | Sep-2015 |
| 8 | Import Excel Workbook Contents not supports external connections to SSAS Tabular models | * Converted to AS live connections in PBI desktop |  | Sep-2015 |
| 9 | New Delete All option in Data Source Settings dialog | * File – Options and Settings * Data Source Settings |  | Sep-2015 |
| 10 | Option to Enable Relationship Import during Refresh Operations | * PBI Desktop automatically creates relationships in local data model * File – Options * Current File – Data Load * By default this is turned off now so changes to underlying data source do not impact local data model |  | Sep-2015 |
| 11 | Azure DocumentDB connector | * NoSQL DocumentDB service designed for JSON and JavaScript * Made for Apps that run in the cloud * Provide URL * Optional – Database * Optional – Collection * Optional – SQL Statement * PBI will find all tables and expose them to Query Editor, Model and Reporting |  | Oct-2015 |
| 12 | Mailchimp connector | * New connector * Has been available as content pack in PBI Service * Can now benefit from data preparation features in PBI Desktop * Other - MailChimp |  | Oct-2015 |
| 13 | DirectQuery for SQL Server and Azure SQL DB (Preview) | * Users can pick between loading data to PBI Desktop or use direct query to query remote sources * Will save time waiting for data, save memory/on your local machine * Load or Edit after selecting tables * Selecting Direct Query shows the ‘Create Connections’ – much faster as you’re not loading/moving any data * Visualization commands will be converted into SQL against data source * In DQ mode there’s no Data View (no cache) * No New Measure or Calc columns as of Oct Update * Can still use some transforms in QE such as filter rows or remove columns or add derived columns (all in DQ) |  | Oct-2015 |
| 14 | SSAS Multidimensional Support | * File – Options and settings – Options to enable * Direct Connection: Connected * Must have SQL Server 2012 SP1 CU4 or above * Will be adding support later for hierarchies, display folders, etc |  | Nov-2015 |
| 15 | SAP Hana | * Very important enterprise BI source * Analytic views and calculation views * Need to install SAP Hana ODBC driver on client from SAP marketplace * Supports Direct Query and Import Mode * After clicking load you get the ‘Import or Direct Query’ Connection Settings dialog box |  | Nov-2015 |
| 16 | R Script | * Get Data – Other * Specify the R script to execute against R server * Produces one or multiple tables   + Could perform additional transformations before loading if necessary |  | Nov-2015 |
| 17 | Direct Query for:  SQL Server  Azure SQL Database  Azure SQL Data Warehouse | * Not a preview feature now, Generally Available * Same experience for Azure SQL Data Warehouse * Improving publish experience using Direct Query   + Improvements to PBI Gateway allowing users of PBI Service to use DQ |  | Nov-2015 |
| 18 | Azure Data Lake | * Provide URL for Azure Data Lake store * Preview all tables, navigate, explore, transform |  | Nov-2015 |
| 19 | Marketo | * Have had content pack against Marketo before * Now use PBI desktop to create reports against source * In Other Categories o |  | Nov-2015 |
| 20 | SSAS Multidimensional Hierarchy Support | * Enhancing preview feature to support hierarchies   + Will need to have Preview Feature turned on for explore live * Just click Geography hierarchy and drill up/down buttons enabled * Full support for all drill down capabilities (drill all or drill down mode (specific leaf) |  | Dec-2015 |
| 21 | Stripe Connector | * Easily manage online payments for businesses * Connect to Stripe Account * Get Data – Other - Stripe |  | Dec-2015 |
| 22 | SmartSheet Connector | * Get Data – Other – Smartsheet * Smartsheet accounts * Workspaces, worksheets, reports, collaborators |  | Dec-2015 |
| 23 | ‘Enter Data’ | * Paste or enter data to create a table manually * Previously had to create table in Excel and import from Excel or use M or DAX * Sometimes need a very small static table to support report or model * Specify headers and name of table * Loads table into data model * Can also just Ctrl+C from external Excel workbook and Ctrl+V   + Load or Edit to perform additional transforms   + Modify source table and transforms just like any other data source table |  | Dec-2015 |
| 24 | Direct Query Improvements | * All data types of T-SQL and SAP Hana supported * Performance Improvements for Azure SQL and SQL Server |  | Dec-2015 |
| 25 | ODBC Connector | * User and System DSNs   + Select from list of DSNs   + Use any DSN from your machine   + Specify   + Could use ‘none’ option to fully specify connection string * Previously had to fully specify connection string |  | Dec-2015 |
| 26 | CSV Connector | * Ability to specify Column Delimiter in the Source dialog |  | Dec-2015 |
| 27 | Create measures in Direct Query mode | * Will be enabling other Modeling features in DQ mode over the next few months * Click ellipsis or right-click – New Measure * Some DAX measures are not recognized/enabled by default as they could be expensive on source system * Have option of enabling unrestricted measures in Options |  | Jan-2016 |
| 28 | GA support for SSAS Multidimensional Exploration Mode |  |  | Jan-2016 |
| 29 | Enhanced Hierarchies support | * Was previously all or nothing with hierarchies * Can now specify level(s) of hierarchies (for SSAS Multidim) |  | Jan-2016 |
| 30 | GA for SAP Hana connector | * Fully supported in PBI Desktop |  | Jan-2016 |
| 31 | Append Multiple Tables | * Previously had to append two tables at a time; multiple steps required for unioning many tables * Can now specify Three or More Tables to append all * Can also control order and append same table multiple times * Disable load for intermediate tables, only load final output |  | Jan-2016 |
| 32 | Refresh Data for Individual Tables (Report & Data Views) | * Previously, clicking Refresh on Home tab from Report view would refresh all tables (could be time consuming) * Just refresh single table |  | Jan-2016 |
| 33 | Option to disable data previews | * Background evaluation can sometimes consume CPU resources * File - Options – Data Load   + Allow data preview * Setting is scoped to the given file |  | Jan-2016 |
| 34 | DirectQuery support for Oracle and Teradata databases | * Preview feature for now for these * Must enable preview in PBI Desktop * Previously DQ sources are GA (SQL Server, SSAS, Azure) |  | Feb-2016 |
| 35 | DirectQuery support for Calculated Columns | * Last month was calc measures, now calc columns * Expect more improvements to DirectQuery soon |  | Feb-2016 |
| 36 | Support for publishing SSAS Live Reports | * Specify which gateway you want to use for the given report to hit the on-prem database * Previously, if you had multiple gateways the report didn’t know which one to use |  | Feb-2016 |
| 37 | JSON File Connector | * Specify the JSON file * Expand option in Query Editor to parse file * Any Rest API or URL that returns JSON file |  | Feb-2016 |
| 38 | SQL Sentry Connector | * Allows you to monitor performance of SQL Server (health, availability, disk, cpu, memory, etc) * Previously available as content pack * Can now build your own reports via PBI desktop |  | Feb-2016 |
| 39 | Support for jagged CSV files |  |  | Feb-2016 |
| 40 | Exchange Connector | * OAuth Support |  | Feb-2016 |
| 41 | SharePoint List Connector | * URL validation |  | Feb-2016 |
| 42 | DB Connectors | * Option to disable navigation columns in Query Previews | Can uncheck the relationships detection (default is checked) and load..much faster to load data without relationships | Feb-2016 |
| 43 | Web Connector | * Fine Grained Scoping of Credentials * Pick any level from hierarchy (not just URL or domain)   To manage privacy levels |  | Feb-2016 |
| 44 | Enter Data | * User Experience improvements   + Automatically detect heads |  | Feb-2016 |
| 45 | SAP HANA | * Single Sign-on with Windows Authentication (PBI Desktop only) |  | Feb-2016 |
| 46 | SAP HANA | * Support for Field Labels   + Will show up in navigator; supported in query |  | Feb-2016 |
| 47 | SAP BW Connector (Preview) | * Settings – Options – Global – Preview Features * SAP Business Warehouse connecotr * Required: SAP BW Client Tools installed on local machine |  | Mar-2016 |
| 48 | R Scripts Connector now Generally Available | * Under Get Data – Other * Required: R installed on local machine to run R scripts * Required: data source supports R |  | Mar-2016 |
| 49 | Command Timeout in the UX | * Under Advanced Options when connecting to database sources |  | Mar-2016 |
| 50 | Privacy Level Setting at Machine Level | * Can now specify the privacy level (public, Org, private) for each data source.   + Privacy sometimes required local transforms (slow) * Currently per file, per user setting – Current File - Privacy * New option: Always combine data according to privacy level settings for each source (whether current file privacy setting is enable disabled) |  | Mar-2016 |
| 51 | Direct Query for Oracle and Teradata now GA | * Preview for DQ to Oracle and TD in February; now has become GA * Support for DQ for Oracle and Teradata now in Enterprise Gateway |  | Mar-2016 |
| 52 | New Connectors | * SharePoint Folder * Webtrends * SparkPost * tyGraph |  | Apr-2016 |
| 53 | New ‘Online Services’ category in Get Data dialog | * Moving online services to separate tab reduces list of sources under Other * Other sources now:   + Web,   + SP List   + HDFS File   + Active Directory   + MS Exchange   + ODBC   + R   + Spark   + Blank Query |  | Apr-2016 |
| 54 | Direct Query vs Import Selection | * Specify DQ or Import mode in data source dialogs |  | Apr-2016 |
| 55 | New data connectors | * IBM Informix * comScore Digital Analytics * Troux * Planview Enterprise | * IBM Informix available via Database category in Get Data * comScore Digital Analytics available via Online Sources category * Troux available via Online Sources category * Planview Available via Online Sources category | May-2016 |
| 56 | Improved DB2 Connector | * Now have the choice to use the Microsoft driver for IBM DB2 which is automatically included in the PBI Desktop installation |  | May-2016 |
| 57 | Data Source Settings Enhancements | * Can now modify the location of a data source for all queries using that data source within a PBIX file.   + Eliminates need to update data source for each query * Now a Current File scope in Data Soruce Settings |  | May-2016 |
| 58 | Improved relational database connectors with Display Schema information | * Available as an Advanced Option in all database connectors |  | May-2016 |
| 59 | ‘Save As’ a Power Bi Template | * File – Save As dialog to create PBIT file   + Stores only the definitions of queries, model, parameters and visualizations not the data |  | May-2016 |
| 60 | Azure Enterprise Data Connector | * Retrieve info about Azure accounts |  | June-2016 |
| 61 | Enhanced SAP BW and HANA connectors | * Multi-Select of values for variables/parameters * Support for Hierarchies in SAP BW |  | June-2016 |
| 62 | Enhanced OData connector | * Imports Open Type columns   + Available in Advanced Options |  | June-2016 |
| 63 | Enhanced MS Access DB Connector | * Select Related Tables button | Same behavior as other database sources.  Will select all tables that have a direct relationship with the table selected. | June-2016 |
| 64 | Amazon Redshift  Preview Feature | * Import and Direct Query supported | If enabled as preview feature, will see option under Get Data – Database | July-2016 |
| 65 | Impala  Preview Feature | * Preview * Connect to Impala cluster * Import only now   + Direct Query supported soon |  | July-2016 |
| 66 | Command Timeout option via the UX for Web connection | * Eliminates the need to customize the M query * Available in Advanced Mode for Web connector |  | July-2016 |
| 67 | CSV/Text – Support for Fixed-Width delimited files | * Specify a list of positions to split by in the Table preview dialog (if fixed width)   + first column |  | July-2016 |
| 68 | SAP BW improvements | * Support for Netweaver driver * Ability to specify a language when connecting to an SAP BW server * Error messages now localized to the PBIX install language | Need to ensure this driver is configured in your machine in order to continue running existing reports, both via PBIX and PBI gateway | July-2016 |
| 69 | Impala DirectQuery Support | * Still in Preview but was import mode only last month |  | Aug-2016 |
| 70 | Snowflake Connector | * Available in preview feature * Snowflake is cloud-native data warehouse |  | Aug-2016 |
| 71 | GA of SAP BW connector | * Now GA, available without any preview switch |  | Aug-2016 |
| 72 | Improved Web connector | * Get Data – Web   + Paste URL * Previously had to select tables from a list * Don’t have to guess or use process of elimination to determine the table you want |  | Aug-2016 |
| 73 | Snowflake Connector DirectQuery Support |  |  | Sep-2016 |
| 74 | ProjectPlace Connector | * Online Services - Projectplace |  | Sep-2016 |
| 75 | Oracle Connector -Navigated Previews | * Significant performance improvement for previewing tables when connecting to Oracle databases. (30% or less of time previously) |  | Sep-2016 |
| 76 | OData Connector – Select Related Tables Option | * When connecting to OData V4 feeds, you can click Select Related Tables in the Navigator |  | Sep-2016 |
| 77 | SA BW and HANA Connector Improvements | * Enhancements to parameter input UX:  1. For single select parameters, can type in values and view member caption in dropdown list 2. For multi-select parameters, can use search box and view member capation |  | Sep-2016 |
| 78 | Web Connector – UX Support for HTTP Request Headers | * Get Data * Web * Advanced |  | Sep-2016 |
| 79 | Microsoft Dynamics 365 for Financials | * Under online services * \*Still in development/beta as of January 2017 release |  | Oct-2016 |
| 80 | OLEDB | * Under ‘Other’ category of ‘Get Data’ sources * Any OLED DB Driver you want to connect to |  | Oct-2016 |
| 81 | Mixpanel | * Under online services * Connect to mobile and web analytics data from Mixpanel accounts |  | Oct-2016 |
| 82 | Spark DirectQuery | * Needs to be only data source in your file/model (Like DQ in SSAS Tabular, can only have one Direct Query source) * Available via Azure option and ‘Other’ option for Spark |  | Nov-2016 |
| 83 | OData Connector Improvement | * Query folding for expand record operations | OData service responsible for expensive operation of expanding records rather than client machine | Nov-2016 |
| 84 | Azure Analysis Services | * Can use the same SSAS option that you would for on premises. * Just use the link/URL for server provided from Azure portal |  | Nov-2016 |
| 85 | Improved Combined Binaries Experience | * Correct file format detected (text, XSLX, JSON) * Select an object for the first file to use in the combine | Three artifacts created now:   1. Example query of required extraction steps 2. Function query that parameterizes file input to query 3. Function query applied to original query with input binaries   Overall process of combining in multiple files should be much easier. |  |
| 86 | Visual Studio Team Services Connector | * Preview Release |  | Jan-2017 |
| 87 | SQL Server Connector Support | * SQL Failover Support   + Add redundancy to data source to increase availability of app |  | Jan-2017 |
| 88 | “Select Related Tables” now supported for  ODBC and OLE DB connectors | * Select a table from the preview * Click Select Related Tables * Tables related to the table selected in Get Data are then selected |  | Feb-2017 |
| 89 | Enhanced Folder connector – support for ‘Combine’ from the preview dialog | * Can now directly load or edit from path rather than via the ‘combine binaries’ step |  | Feb-2017 |
| 90 | Unified text & CSV Connector | * One connector to select following extensions:   .txt, .csv, .prn |  | Feb-2017 |
| 91 | PowerApps Common Data Service Connector | * Only in beta currently |  | Feb-2017 |
| 92 | Azure Analysis Services Connector | * Beta release, still under development. Future changes may cause queries with current connector to be incompatible |  | Mar-2017 |
| 93 | Azure Data Lake Store Connector now GA | * Beta tag removed with GA, specify URL per second image below |  | Mar-2017 |
| 94 | DB2 Connector: Option to Specify Package Collection | * Can only be used with MS driver for IBM DB2 * Packages in DB2 are database objects that contain executable forms of SQL statements. |  | Mar-2017 |
| 95 | Combine Binaries: Ability to Specify Sample File to Use | * Can now select which file from a folder should be used as a sample file. * <https://powerbi.microsoft.com/en-us/documentation/powerbi-desktop-combine-binaries/> |  | Mar-2017 |
| 96 | Connect to datasets in Power BI Service (Preview) | * Will see all workspaces you have access to * Will list models you have edit access to * Live connection to that model in the service * “connected to Power BI dataset” in bottom right * Can deploy a single model to a group workspace and grant everyone edit access so they can create their own reports * As model is updated |  | Apr-2017 |
| 97 | Redshift Connector | * Not a preview feature now, in Beta * Can now publish to PBI Service using Redshift now |  | Apr-2017 |
| 98 | SAP HANA & BW Enhancements to parameter input experience | * Can filter down parameters to only required parameters * Pop up dialog for single and multi-selection |  | Apr-2017 |
| 99 | New Connector: Dynamics 365 for Customer Insights | * Get Data – Online Services   + Currently Beta |  | May-2017 |
| 100 | Combine Files - Reference First File as Example | * Choosing First File avoids scenario where specific example file is moved or deleted |  | May-2017 |
| 101 | Custom Data Connectors Support (Preview) | * Created custom data connector will be reflected in the Get Data dialog * Can be used like all other connectors |  | June-2017 |
| 102 | Power BI service Live Connect to On Premises and Push streaming datasets | * Could previously only connect to published Power BI datasets * Can now connect to On-Premises sources * Can also connect to push streaming datasets in PBI service | Re-use the three PBI datasets across many reports | June-2017 |
| 103 | Impala connector is now generally available | * Beta tag removed |  | June-2017 |
| 104 | Amazon Redshift connector is now generally available | * Beta tag removed |  | June-2017 |
| 105 | SAP BW connector – DirectQuery Support (beta) | * Import connector is not in beta * DirectQuery option now appears. | \*Client components (SAP NetWeaver library) required for this connector  <https://powerbi.microsoft.com/en-us/documentation/powerbi-desktop-sap-bw-connector/>  <https://support.sap.com/en/my-support/software-downloads.html> | June-2017 |
| 106 | IBM Netezza connector (beta) | * IBM Informix is currently in beta as well * IBM DB2 is GA |  | June-2017 |
| 107 | Snowflake connector now generally available |  |  | July-2017 |
| 108 | Live Connect to PBI Service is now Generally Available | * Can now switch datasets via Data Source Settings under Edit Queries   \*example publish validated development report to a production dataset in a production app workspace |  | Aug-2017 |
| 109 | Google BigQuery connector (beta) | * Under database category in Get Data * Import or DirectQuery supported |  | Aug-2017 |
| 110 | Azure Consumption Insights Connector | * Under Online Services |  | Sept-2017 |
| 111 | Improvements to the Dynamics 365 for Financials connector | * Also Under Online Services * Can now authenticate via Azure Active Directory * Can now auto-detect your endpoint for Dynamics 365 whenever you sign in with your credentials |  | Sept-2017 |
| 112 | Vertica connector | * Get Data – Other Tab | Both Import and DirectQuery mode  HP Vertica is columnar compresses, shared nothing MPP system for DW | Oct-2017 |
| 113 | SAP BW connector improvement: additional member properties | * Can import additional member properties via nav dialog   + Download as column |  | Oct-2017 |
| 114 | Impala Connector – Support for Windows Authentication |  |  | Nov-2017 |
| 115 | Adobe Analytics Connector | Online Services section |  | Dec-2017 |
| 116 | HDInsight Interactive Query Connector (beta) | Import or DirectQuery |  | Dec-2017 |
| 117 | Data.World Connector (beta) |  |  | Dec-2017 |
| 118 | SAP BW connector improvements | * Option to connect to message server in addition to application server * Support for Windows Authentication |  | Dec-2017 |
| 119 | IBM Netezza connector | * Now generally available |  | Dec-2017 |
| 120 | Support for Azure AD Auth for Azure SQL DB and Azure SQL DW connectors | * Use your AAD account to authenticate * Support for this in the PBI Service expected in the next few weeks |  | Jan-2018 |
| 121 | Improvements to DirectQuery over SAP HANA (Preview) | * Previously it was being treated as a relational source. Had to be careful with performance * Will now treat it as a multidimensional source like SAP BW | Read the blog and documentation to learn more | Feb-2018 |
| 122 | Visual Studio Team Services Connector |  |  | Mar-2018 |
| 123 | SAP HANA connector enhancements | * DirectQuery multidimensional support is now GA * SSL Certification Validation Support |  | Mar-2018 |
| 124 | SAP BW DirectQuery connector is now GA |  |  | Mar-2018 |
| 125 | Azure Analysis Services connector is now GA |  |  | Mar-2018 |
| 126 | Adobe Analytics connector now GA | Preview and select multiple dimensions and measures within navigator to create single tabular output.  Can also provide input parameters.  Can edit with query editor. |  | Apr-2018 |
| 127 | SAP HANA connector improvement: Port selection |  |  | Apr-2018 |
| 128 | Dynamics 365 Business Central connector  (GA, no beta required) | Previously known as Dynamics 365 for Financials |  | Apr-2018 |
| 129 | SAP BW Connector Improvements | * New driver and improved performance * Improved support for hierarchy variables | * 1. (“massive performance improvements”)   Need SAP .net connector 3.0 (can download from SAP site)  Pick the version that matches your version of PBIX (32 ro 64 bit)  If you use 2.0 connection, PBI will switch from SAP client driver to new driver for SAP BW developed by Microsoft  Able to retrieve several million rows of data  Can switch execution modes  Support for compressed mode  Improved detection of date variables  Will expose date and time dimensions as date and times respectively rather than DAX | Jun-2018 |
| 130 | Spark connector now supports Windows authentication | * Previously only had basic auth |  | Jun-2018 |
| 131 | Odata V4 connector enhancements | * Improved support for complex types * Improved support for custom URLs |  | Jun-2018 |
| 132 | ODBC connector improvements | * Folding support for Top Rows * Ability to filter navigation by DSN catalog | If ODBC source supports TOP operator | Jun-2018 |
| 133 | IBM DB2 DirectQuery (preview) | * Previously only import was supported * DirectQuery now available in Preview as well |  | Jul-2018 |
| 134 | Improvements to Web by Example connector | * Support for importing multiple custom tables * Automatic completion for specifying multiple tables |  | Jul-2018 |
| 135 | SAP HANA – Default values for variables in Variable Input experience | * Connector reads SAP HANA metadata to determine default value |  | Jul-2018 |
| 136 | Spark Connector Generally Available |  |  | Aug-2018 |
| 137 | PDF File connector (Preview) | Need to enable as preview  Will appear under file category in Get Data dialog |  | Sep-2018 |
| 138 | SAP BW connector – support for measure properties | Plan to support this in DirectQuery… |  | Sep-2018 |