Creating Reports Using Db2 Web Query Designer Volume 3

Release 2.3

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Contents

Chapter 1

Creating Reports

You can create reports in a visualization in Db2 Web Query Designer similar to the way in which you create charts. Reports allow you to communicate information at a high level of detail using a familiar tabular format. You can create a stand-alone report in a visualization, or combine multiple reports in a page.

In this chapter:

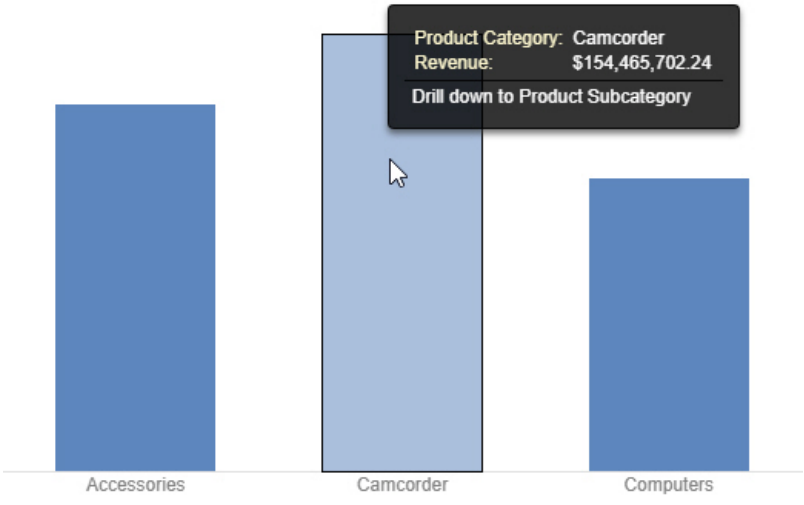
Enabling Hierarchical Drilling in Db2 Web Query Designer With Auto Drill

Auto Drill enables you to navigate through different levels within the dimension hierarchy of your data source. This allows you to review underlying data for a particular area, and move through the structure of your data source based on your informational needs.

Auto Drill can be enabled for stand-alone content items. If you convert a chart or report with Auto Drill to a page with new content, a warning appears, alerting you that Auto Drill functionality will not be carried over. Auto Drill is functional in content added externally to an assembled page. To enable Auto Drill, in the Content section of the Settings tab, on the Properties panel, select *AutoDrill*. Auto Drill is not available if your chart or report does not contain fields that are part of a hierarchy.

Once you have enabled Auto Drill, you can develop your report or chart and run it to activate the hyperlinks that Auto Drill creates. This enables you to navigate up or down through the related hierarchy of your data source by clicking the links that display.

In a chart, Auto Drill links are available from the tooltip that appears when you point to a section of a chart, as shown in the following image.

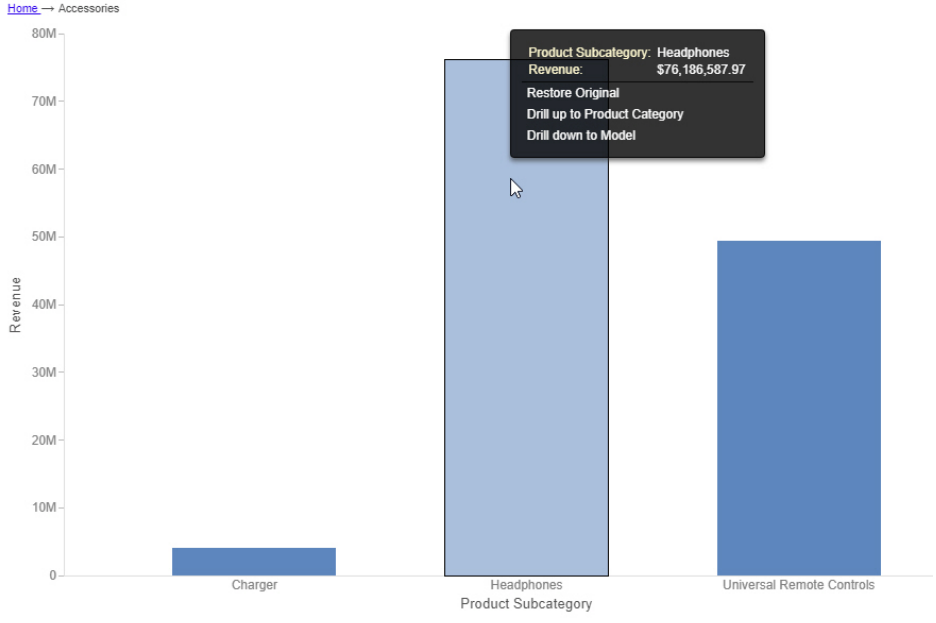


In a report, Auto Drill links are available when you click a data value hyperlink. The values are styled as hyperlinks to indicate that you can drill into them, as shown in the following image.

Product Category	Sale Year	Quantity Sold	Revenue
Accessories	2014	[illegible]	[illegible]297.57
	2015	31,396	$7,860,068.93
	2016	46,735	$11,820,675.96
	2017	63,836	$16,060,415.69
	2018	139,977	$35,619,872.81
	2019	209,571	$53,208,007.57
Camcorder	2014	17,722	$5,878,431.53
	2015	28,485	$9,673,248.16
	2016	41,250	$13,971,708.11
	2017	56,782	$19,438,607.89
	2018	123,972	$42,396,539.60
	2019	187,033	$63,107,166.95
Computers	2014	6,730	$1,441,835.19
	2015	12,239	$2,479,491.58
	2016	19,820	$4,170,749.59
	2017	34,626	$7,857,928.55
	2018	89,626	$24,176,475.33
	2019	188,736	$63,190,001.88

When you click a hyperlink, the option to drill up or drill down displays, depending on where you are in the hierarchy of your data. You can then select one of these options to begin navigating your data. For example, if you have Product,Category in your hierarchy, you would be able to drill down to Product,Subcategory. When you drill down, you can subsequently drill back up to the originating dimension sort field. If you have selected a data source that has multiple levels and your report or chart uses a component in the middle of the hierarchy, both the Drill up and Drill down options will display. Once you have started navigating your data using the Drill up and Drill down options, the Restore Original option displays, enabling you to start your data analysis over by re-executing the original Auto Drill request.

The drill up and drill down options are shown in the following image.



At run-time, the Auto Drill functionality displays a breadcrumb header. This defines your current location in the hierarchy of your data source and enables you to navigate back and forth between different levels in your data.

Note:

- The Auto Drill functionality is only available for data sources that have a dimension hierarchy. Dimension hierarchies are a capability of Business View Plus, and also of legacy Dimension View and Real Cube metadata.
- Auto Drill is not supported for all HTML output format charts, or for HTML5 output format charts that do not support the new chart attributes syntax.
- You must use dimension fields as a sorting field, either BY or ACROSS.
- If you are creating a chart that has multiple dimension sort fields in the request and some of these belong to the same dimension hierarchy, you may encounter multiple links with the same label in the drill menu.
- Auto Drill functionality is not available in reports distributed by Report Broker, because Auto Drill uses live data, in an interactive session, for data drilling. Data values and totals may not be the same if the data has changed since the last distribution. Mixing past data with current data could impact data analysis.

- When Auto Drill is enabled, Accessibility is disabled. When Accessibility is enabled, Auto Drill is disabled. In Chart mode, Accessibility is disabled, by default.

Procedure: How to Use Auto Drill to Navigate the Hierarchy of Your Data Source

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

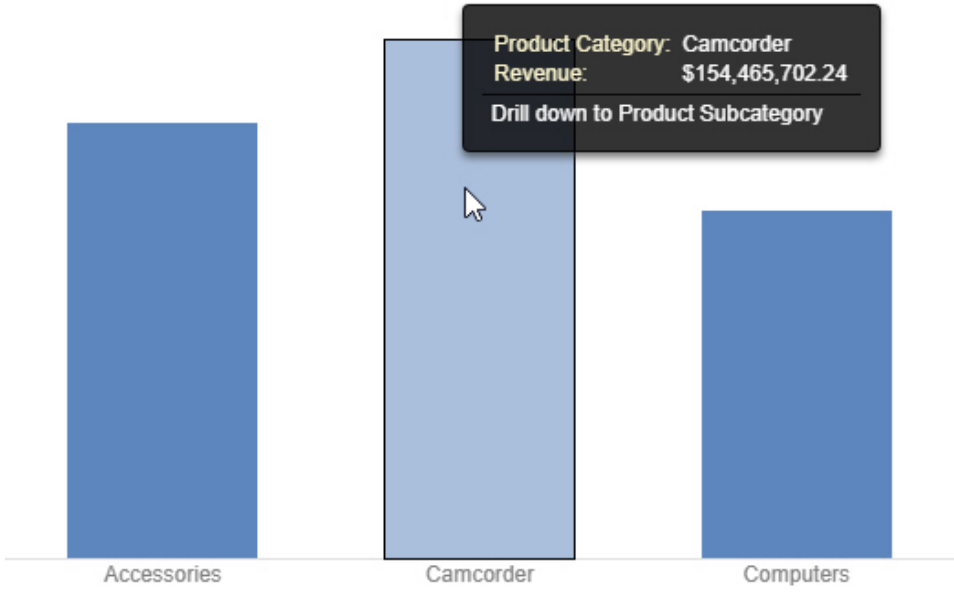
   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. Create content with one or more hierarchical fields (for example, Product,Category).
4. On the Properties panel, on the Settings tab, expand *Content*, and then select *AutoDrill*.
5. Click *Run in new window*.

   Your content displays.

6. If you created a chart, hover over an area of the chart (for example, a bar).

   A menu appears, as shown in the following image.

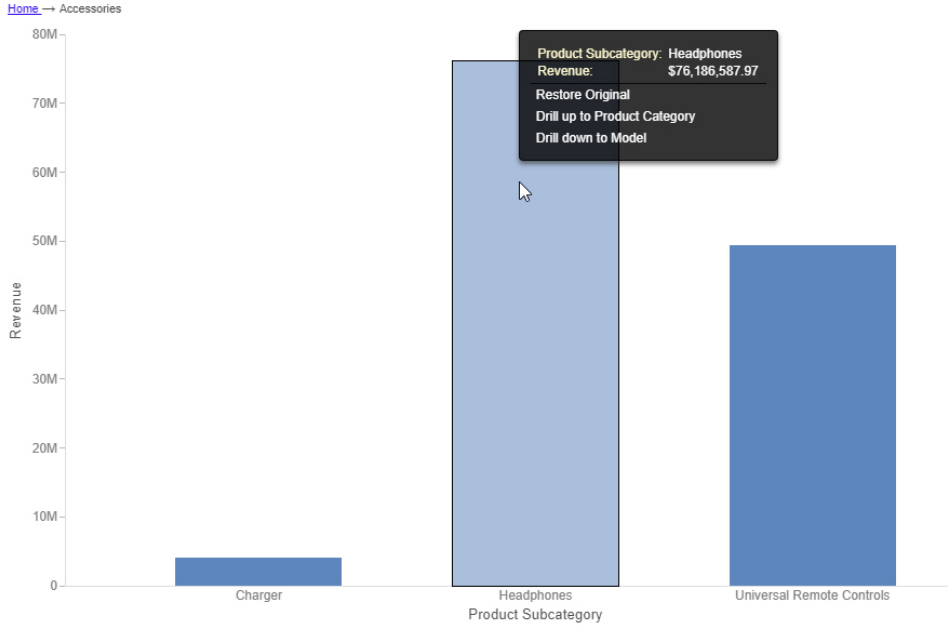


If you created a report, click a drill-down link. A menu appears, from which you can choose to drill up or down depending on your position in the data source, as shown in the following image.

7. Select a hierarchical value to which to drill down to.

   Once you have drilled down on a field, you can subsequently drill up.

8. To return to the default state of the report or chart, click the *Home* link in the breadcrumb trail, or click a hyperlink or hover over a chart aspect and click *Restore Original*, as shown in the following image.



Enabling Automatic Content Linking in Db2 Web Query Designer With Auto Linking

Auto Linking makes it easy to connect reports and charts in your development environment, expanding the reporting capabilities of your organization. Using Auto Linking, you can dynamically link multiple charts and reports with a single report or chart of any format, based on their common sort (BY) fields and parameters referenced in any filters. It is this commonality that dynamically links content in your Db2 Web Query repository, allowing you to discover new possibilities in your data, and explore new relationships within your reporting enterprise. In addition, Auto Linking saves development time and effort, because drilldowns do not need to be manually created and maintained.

To use Auto Linking, you must use the AutoLink option in Db2 Web Query Designer to set the reports or charts that provide Auto Linking drilldowns. In addition, you must also set reports or charts to be Auto Link targets. The options to enable and disable Auto Linking and Auto Link target functionality are available in the *Content* area, located beneath the buckets on the Db2 Web Query Designer Properties panel.

Auto Linking and Auto Linking target status can only be enabled for stand-alone content items. If you convert a chart or report with Auto Linking to a page, a warning appears, alerting you that Auto Linking functionality will not be carried over.

Note: You can open an existing chart and enable Auto Linking or set the item as an Auto Link target.

When Auto Link functionality is activated, tooltips in your charts can display links in the tooltip for each sort (BY) field with qualifying target reports or charts at run time. In Auto Link enabled charts, you can add sort (BY) fields to the Vertical Axis, Horizontal Axis, or Color field containers. In Auto Link enabled reports, Auto Linking drill-down links are added to each sort value for which there are Auto Link targets available.

To qualify a chart as an Auto Link target, you must include filters that contain the parameters that you selected as the sort field or fields in Auto Linking enabled content. The parameter names defined in these filters must be the same as the sort (BY) field names in the Auto Link enabled chart. For example, if you Auto Linking enabled content uses Product Category as a sort field, then the Auto Linking targets that are available will be those that have parameters for the Product Category field. When you select a chart as the Auto Link target, it specifies that the parameter information should be cataloged, and will be evaluated when an Auto Link enabled chart is run.

For an Auto Link enabled chart or report at run time, the target reports and charts are those that have filters with parameters for all sort fields. For run time for charts, the linked sort field values in the Auto Link enabled content is passed to the Auto Link target report or chart and used as a filter value.

For example, you may have an Auto Link enabled chart that contains sort (BY) fields, Product Category and Model, with a measure (Sum) field, Revenue. To qualify as an Auto Link target, other charts in your repository can contain a single filter with a parameter for Product Category, or two filters with parameters for both Product Category and Model. When you run the Auto Link enabled chart, the Product Category field will link to target reports or charts that have a filter with a parameter for Product Category, and the Model field will link to target reports or charts that have filters for both Product Category and Model.

You can access the target reports or charts from a tooltip option that displays when you point your mouse over an area of the chart, such as a bar that represents Revenue by Product Category and by Model.

Using Optional Parameters With Auto Linking to Enhance Drill-Down Results

In addition to the basic Auto Linking functionality that is available in Db2 Web Query Designer, you can also add optional parameters to your Auto Link charts, extending the capability of this feature. An Auto Link enabled chart can link to any target content that you are authorized to access that satisfies the sort (BY) field to the Auto Link target report filter parameter requirement. Auto Link target reports that satisfy this requirement and also have optional filter parameters for other fields are included in the Auto Link target report evaluation, so that all possible combinations of run-time parameters are evaluated and available as links as you run the request. This may produce additional reports or charts in your list of available Auto Link targets, offering you access to an expanded network of related content.

Setting a parameter to optional is not required because the Auto Link enabled content will pass the value for the fields being filtered to the Auto Link target report or chart. When a sort (BY) field value in an Auto Link enabled chart is selected, that value and the value of its parent sort fields are passed to the Auto Link target. When a measure value in a chart is selected, all sort (BY) field values for that measure are passed to the Auto Link target. If you select the Optional option, the Auto Link target report or chart can run on its own (from the Resources Tree or within InfoAssist) without being prompted by Autoprompt for a value for the parameter. This is because optional parameters are assigned a default value.

With Auto Linking, there is no limit to the number of charts and reports that are available from an Auto Linking drilldown, and Auto Linking enabled charts can also be an Auto Linking target, which contributes to the development of a cascading linkage of charts and allows you to drill through continuously through multiple charts and reports.

Note:

- The linked reports and charts displayed are limited to those that you are authorized to run.
- The Auto Link enabled and Auto Link target options can be set individually, or both can be set on the same chart if that item meets the Auto Linking requirements.
- Consideration should be given to how many reports or charts are indicated as Auto Link targets, as the run-time Multi-drill menu for the qualifying target reports or charts may become long in length. In these cases, some browsers may display a script processing warning message.
- Auto Linking utilizes the Multi-drill feature with cascading menus, except when running an HTML report with On-demand Paging enabled or a chart request that is a legacy graph format (PFJ-based formats, such as PNG and non-bucket HTML5), which will display a single-level list in the order the drilldowns are specified in the request.

- The Multi-drill cascading menu displays:
  - Horizontal lines to separate user-specified drilldowns and Auto Link navigation options.
  - Auto Link target reports in a single-level list that is sorted alphabetically, first by folder, and then the Auto Link target reports and charts within the folder. This may differ from the sort order of the resource tree that also applies the Properties Sort order option when sorting folders and items within folders.
- When drilling down through a list of Auto Link target reports and charts, a previously selected Auto Link target report or chart will be excluded so that the available Auto Link targets are reports and charts that you have not yet viewed.

Procedure: How to Set an Existing Report or Chart as Auto Link Enabled

1. On the Db2 Web Query Home Page, click the *My Workspace* tab or the *Workspaces* tab, and navigate to a chart or report for which you want to enable Auto Linking.
2. In the content area, right-click the chart that you want to set as Auto Link enabled, and then click *Edit*.

   Db2 Web Query Designer opens in the relevant mode.
3. Verify that there is a sort (BY) field in the report or chart.
   - For charts, sort fields are added to the Vertical, Horizontal, or Color buckets.
   - In a report, sort fields are added to the Rows bucket.
4. On the Properties panel, on the Settings tab, expand *Content*, and then select *AutoLink*.
5. Save the report or chart.

   Your existing chart or report is now Auto Link enabled.

Procedure: How to Set an Existing Chart as an Auto Link Target

1. On the Db2 Web Query Home Page, click the *My Workspace* tab or the *Workspaces* tab, and navigate to a chart or report that you want to link to as an Auto Link target.
2. In the content area, right-click the chart that you want to set as an Auto Link target, and then click *Edit*.

   Db2 Web Query Designer opens in the relevant mode.
3. On the Properties panel, on the Settings tab, expand *Content*, and then select *AutoLink target*.

Note: Selecting *AutoLink target* specifies that the parameter information for this chart will be stored, adding it to the repository of reports and charts that will be evaluated when an Auto Link enabled report is run.

4. Verify if the report or chart has an existing filter, as qualifying target reports are those that have filters with parameters for the sort (BY) fields in Auto Link enabled reports or charts. If a filter does not exist, add a filter prompted filter to the target report or chart.
   a. From the Data pane, drag a sort (BY) field onto the Filter toolbar. You do not need to select a value.

      Note: When creating a parameter for a field, the parameter name defaults to the name of the field that you select. For example, if you create a filter for the Product Category field by dragging it to the Filter toolbar, the name of the resulting parameter is &PRODUCT_CATEGORY, reflecting the field name PRODUCT_CATEGORY. You can see the field name in the tooltip when you point to a field on the Fields pane.
5. Save the chart.

   Your existing chart is now set as an Auto Link target.

Procedure: How to Create a New Auto Link Enabled Chart

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.
2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.
3. On the Settings tab of the Properties panel, expand the Content area, and then select *AutoLink*.
4. Add fields to the report or chart, ensuring that one is a sort (BY) field.

   - For charts, sort fields are added to the Vertical, Horizontal, or Color field containers depending on the chart type.
   - For reports, sort fields are added to the Rows bucket.
5. Save the chart.

   Your chart is now set as Auto Link enabled.

Procedure: How to Create a New Auto Link Target Chart

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. On the Settings tab of the Properties panel, expand the Content area, and then select *AutoLink target*.

   Note: Selecting *AutoLink target* specifies that the parameter information for this chart will be stored, adding it to the repository of reports and charts that will be evaluated when an Auto Link enabled report is run.

4. Add fields to the chart or report.

5. Add a prompted filter.

   From the Data pane, drag a sort (BY) field onto the Filter toolbar.

   Note: When creating a parameter for a field, the parameter name defaults to the name of the field that you select. For example, if you create a filter for the Product Category field by dragging it to the Filter toolbar, the name of the resulting parameter is &PRODUCT_CATEGORY, reflecting the field name PRODUCT_CATEGORY. You can see the field name in the tooltip when you point to a field on the Fields pane.

6. Save the chart or report.

   Your content is now available as an Auto Link target.

Running an Auto Link Enabled Chart

Auto Linking is supported from any Db2 Web Query repository content, wherever it is run online.

Example: Launching an Auto Link Enabled Report From the Db2 Web Query Home Page

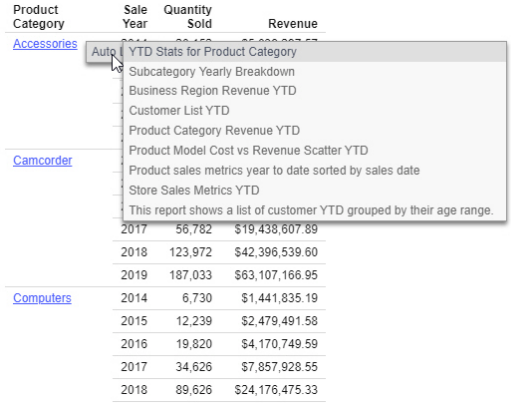
From the Db2 Web Query Home Page, right-click a chart that is Auto Link enabled, and then click *Run*.

Example: **Using Hyperlinks to Link to Other Reports or Charts**

Use the hyperlinks to link to other reports and charts, based on the following information:

- **Charts.** Displays with aspects over which you can hover (for example, a bar) in the chart. A tooltip displays with the Auto Link target reports and charts, as shown in the following image.

- **Reports.** Values pointing to Auto Link targets display as clickable links. When you click a link, a menu appears, allowing you to select a target to open, as shown in the following image.



Changing Output Formats in a Chart or Report

The output format of your content determines the type of file that is generated when that content is run. Different output types enable different levels of run-time interactivity, embedding behavior, and compatibility with outside programs, so you can change the output type depending on how you intend to use your content and who the intended audience is.

You can change the output format for stand-alone charts and reports. Charts and reports created as part of a multi-content visualization use the Interactive output format, which provides run-time features such as tooltips, drill-downs, and on-chart filtering.

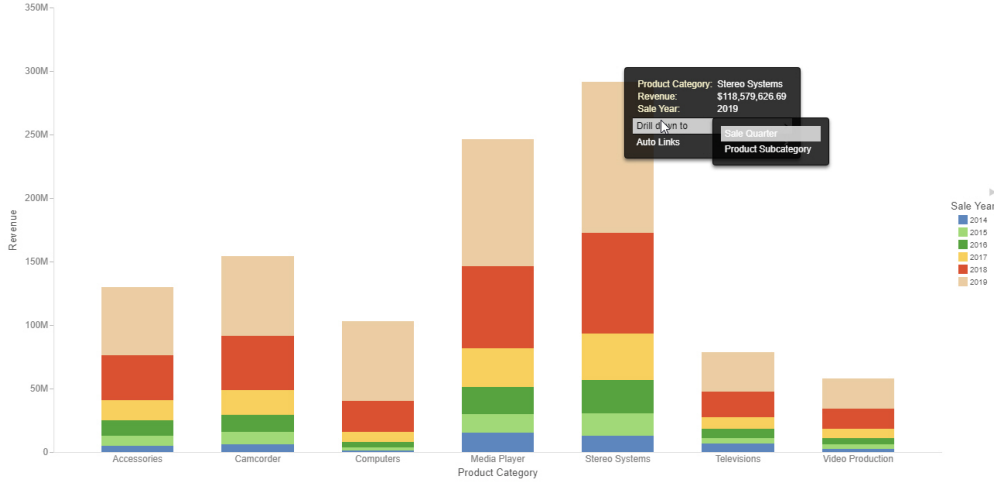
To change the output format of a stand-alone chart or report created in Db2 Web Query Designer, click the Format tab, and, with *General* selected in the Quick Access menu, in the Theme and Format section, select an option from the Output Format drop-down menu. The following options are available:

- HTML5 (charts only)
- HTML (reports only)
- AHTML (In-Document Analytics)
- PDF
- PPTX
- XLSX

- Select at runtime

The HTML, HTML5, and AHTML options are browser-based formats, while PDF, PPTX, and XLSX output can be downloaded, distributed, and opened using standard office suite software. The Select at runtime option provides the ability to run a chart using any of the other output formats. Users can select a format at runtime from a filter control.

When creating a chart, the HTML5 output format generates a basic chart, enhanced with JSON objects, that can be run in a web browser. The HTML5 chart format automatically generates tooltips for different sections of a chart, allowing you to see detailed information at run-time on top of the quick, broad intuitions that a chart communicates. These tooltips provide run-time access to interactive features such as Auto Drill, which allows you to drill into data hierarchies used in the chart, and Auto Linking, which allows you to connect content that uses shared parameters associated with sort fields in the chart. The following image shows a chart that uses the HTML5 output format and has Auto Drill and Auto Linking options available from the tooltip.

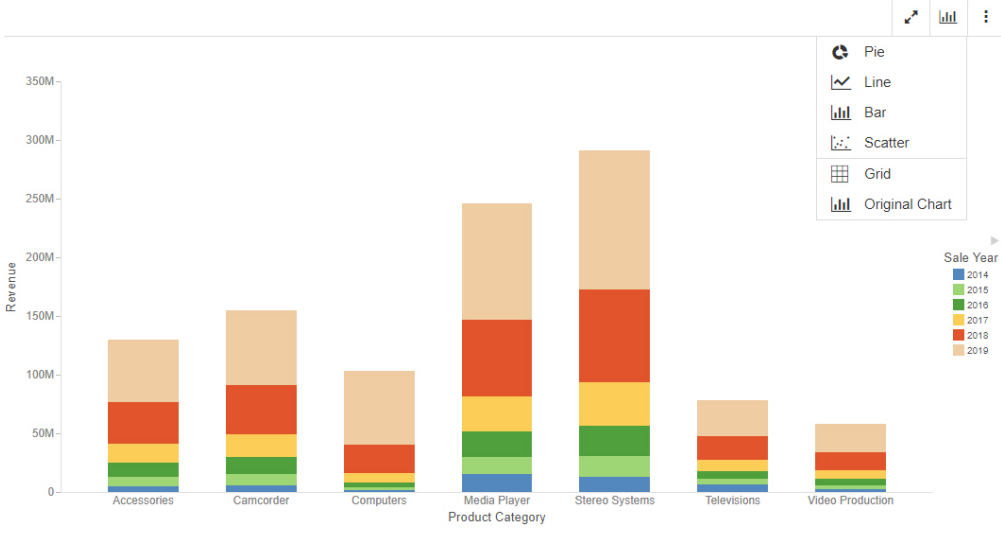


The HTML5 format also enables you to run your chart with Insight, which allows you to modify, filter, and reformat a chart at run-time.

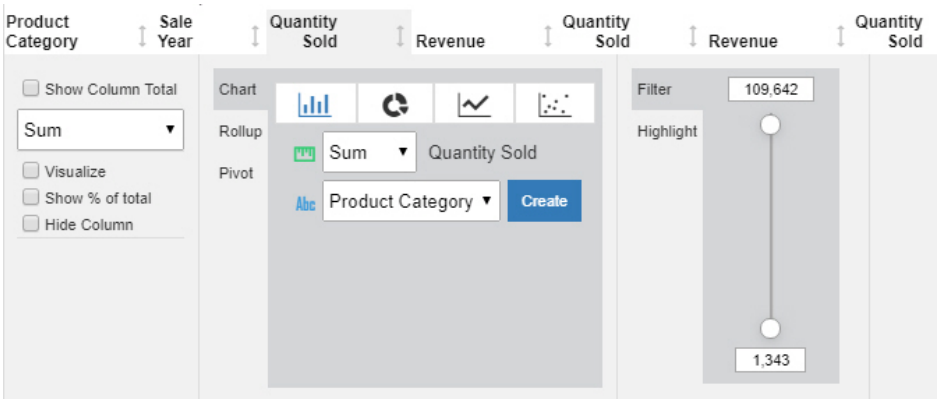
When creating a report, meanwhile, the HTML output format generates a basic report that can be run in a web browser. The simplicity of the HTML format makes it extremely flexible. Run-time interactivity is available in the form of hyperlinks, which provide access to Auto Drill and Auto Linking. An example of an HTML report with Auto Drill hyperlink behavior is shown in the following image.

		Sale,Quarter	1		2		3		4	
Product Category	Sale Year	Quantity Sold	Revenue	Quantity Sold	Revenue	Quantity Sold	Revenue	Quantity Sold	Revenue
Accessories	2014	4,580	$1,125,123.02	4,662	$1,165,106.04	4,783	$1,270,872.45	6,127	$1,478,196.03
	2015	7,121	$1,800,068.41	7,323	$1,827,354.16	7,893	$1,964,121.52	9,059	$2,268,524.86
	2016	11,964	$3,048,787.53	10,713	$2,695,679.25	11,049	$2,760,894.18	13,009	$3,315,315.07
	2017	15,189	$3,856,929.56	14,650	$3,730,642.80	15,111	$3,775,155.51	18,886	$4,697,687.80
	2018	34,997	$8,809,572.78	32,276	$8,215,049.12	33,054	$8,427,452.01	39,650	$10,167,798.95
	2019	51,241	$13,036,443.49	47,565	$12,109,135.49	48,256	$12,253,631.10	62,509	$15,808,797.46
Camcorder	2014	3,873	$1,225,199.72	3,812	$1,244,408.92	4,346	$1,536,974.19	5,691	$1,871,848.75
	2015	6,469	$2,304,019.65	6,475	$2,073,189.24	7,209	$2,529,194.52	8,332	$2,766,844.75
	2016	10,199	$3,452,156.37	9,996	$3,339,495.11	9,835	$3,385,661.95	11,220	$3,794,394.66
	2017	13,600	$4,719,651.07	12,977	$4,445,789.78	13,637	$4,586,985.06	16,568	$5,686,181.94
	2018	30,756	$10,425,741.77	29,016	$10,061,991.48	29,017	$9,849,105.88	35,183	$12,059,700.43
	2019	45,900	$15,459,486.09	42,599	$14,567,964.98	43,451	$14,740,206.14	55,083	$18,339,509.76
Computers	2014	1,343	$302,839.60	1,235	$285,463.66	1,659	$349,989.27	2,493	$503,542.67
	2015	2,723	$545,285.69	2,726	$555,012.38	3,170	$646,064.08	3,620	$733,129.43
	2016	4,622	$935,868.89	4,211	$859,932.09	4,579	$969,684.35	6,408	$1,405,264.26
	2017	8,402	$1,906,405.31	7,673	$1,740,392.33	8,479	$1,920,150.64	10,072	$2,290,980.27
	2018	18,840	$4,285,100.36	19,734	$5,003,619.59	23,240	$6,809,161.08	27,812	$8,078,594.30
	2019	42,608	$13,540,748.18	47,842	$15,212,365.79	48,512	$15,856,387.06	49,774	$18,580,500.85
Media Player	2014	11,717	$3,427,197.08	11,618	$3,268,394.69	12,688	$3,585,613.72	14,943	$4,699,372.86
	2015	12,067	$3,851,602.64	10,264	$3,313,925.34	11,422	$3,727,532.88	13,379	$4,239,470.35
	2016	16,372	$5,239,161.93	15,304	$4,981,985.38	15,931	$5,098,038.72	18,700	$6,084,901.35
	2017	22,232	$7,239,959.35	20,932	$6,793,086.13	22,342	$7,327,768.51	26,929	$8,744,386.06
	2018	49,727	$16,237,411.66	46,876	$15,328,987.92	46,539	$15,106,657.25	56,169	$18,329,370.14

Charts and reports using the AHTML format can also be run in a web browser. AHTML is a format that allows you to perform offline analysis using in-document analytic features. The AHTML format allows you to use Auto Drill and Auto Linking functionalities just like HTML. In addition to this, AHTML enables numerous features that allow you to reorganize and explore the data in your chart without directly accessing the data source on which it is based. This includes the ability to filter the chart by lassoing values, view the data in the chart using a different chart type, create a new chart using the same fields while still in run time, and more. Some of these options are available in menus that appear above the chart at run time, as shown in the following image.



When the AHTML format is used in a report, you can click a column header to filter the report, view the data in the report as a chart, and more. A menu of options appears, allowing you to explore and transform the report, as shown in the following image.



You can also click the arrows above each column header to sort the report by the values in that column.

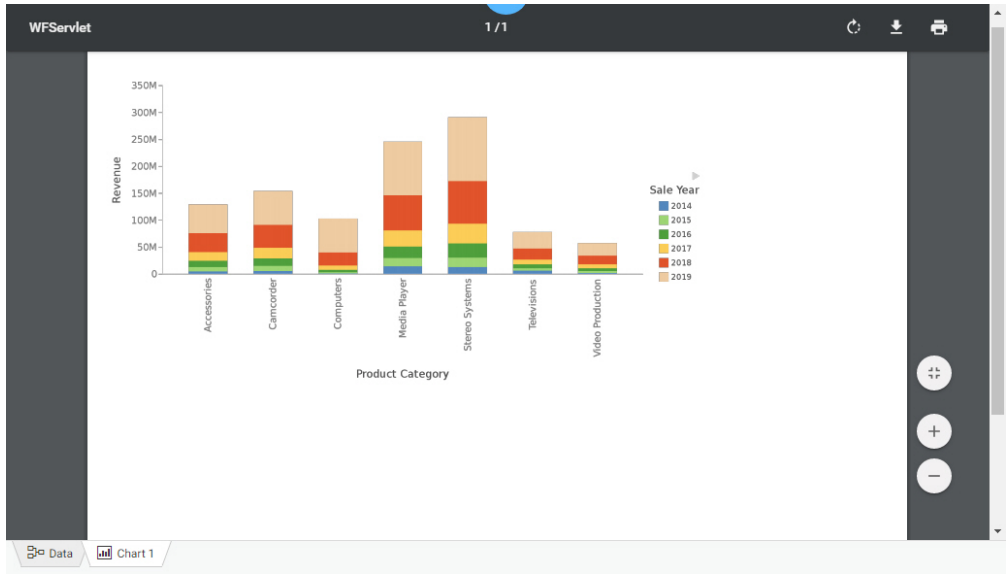
To access your content in common desktop tools, use the PDF, PPTX, or XLSX output formats.

When you run content that uses PDF, PPTX, or XLSX as the output format, a file is created in a .pdf, .pptx, or .xlsx format, respectively. The file opens in a browser viewer for that file type or is downloaded in the browser. The file can be opened using a tool compatible with the output file type. When the item is a chart, an image of the chart is embedded in the file. If the tool allows it, you can then right-click the image of the chart to save it as a separate image file.

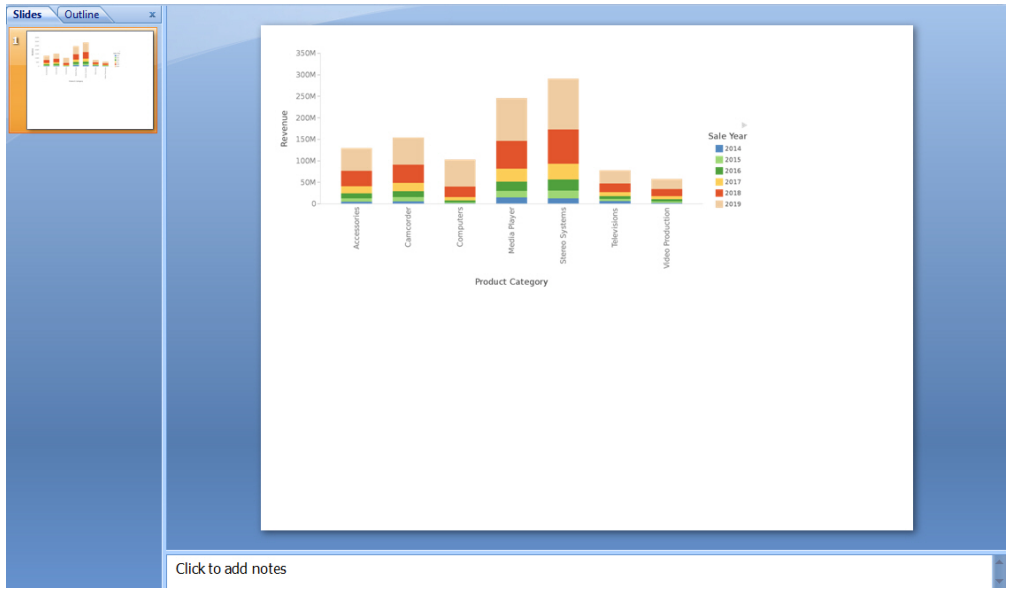
Certain features may not be available, depending on the file type. For example, the PDF, PPTX, and XLSX output formats do not support Auto Linking, Auto Drill, or any other tooltip-based behavior, since a single, self-contained file is created.

Separate pages generated by page breaks or by the MultiPage bucket also behave differently, depending on the output file type. In PDF, a separate page is created for each page break or multipage value, and in PPTX, a separate slide is created. In Excel, however, separate pages are output to the same worksheet, similar to how page breaks and multipage values display in the HTML output format.

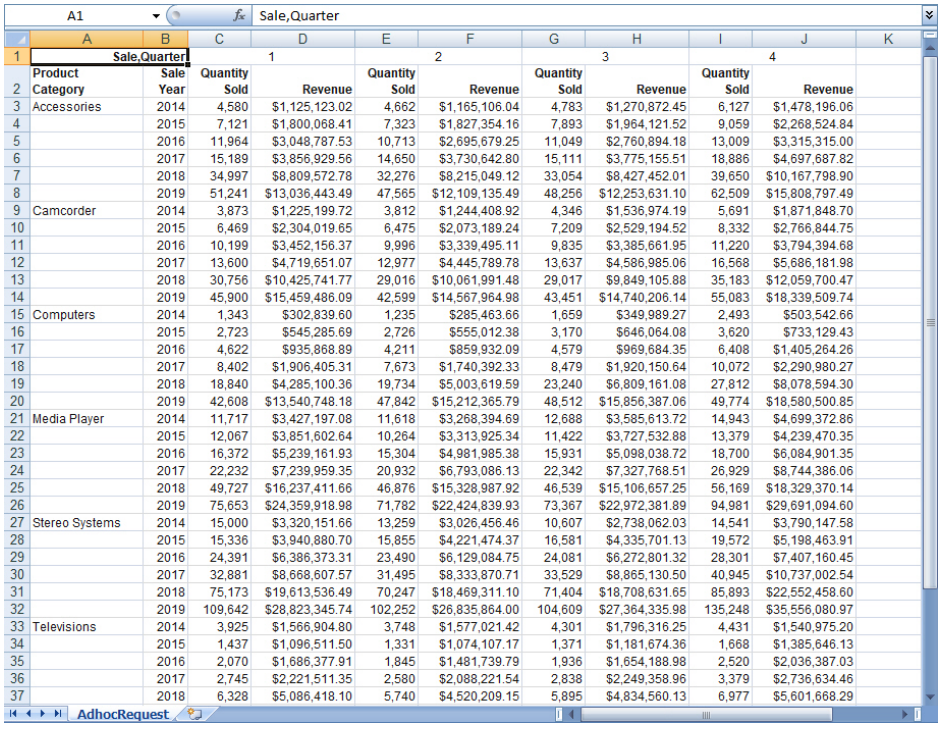
The following image shows an example of a chart created using the PDF output format viewed in a web browser.



The following image shows an example of a chart created using the PPTX output format viewed in Microsoft PowerPoint 2007.



The following image shows an example of a report created using the XLSX output format viewed in Excel 2007.



Sale,Quarter		1		2		3		4	
Product Category	Sale Year	Quantity Sold	Revenue	Quantity Sold	Revenue	Quantity Sold	Revenue	Quantity Sold	Revenue
Accessories	2014	4,580	$1,125,123.02	4,662	$1,165,106.04	4,783	$1,270,872.45	6,127	$1,478,196.06
	2015	7,121	$1,800,068.41	7,323	$1,827,354.16	7,893	$1,964,121.52	9,059	$2,268,524.84
	2016	11,964	$3,048,787.53	10,713	$2,695,679.25	11,049	$2,760,894.18	13,009	$3,315,315.00
	2017	15,189	$3,856,929.56	14,650	$3,730,642.80	15,111	$3,775,155.51	18,886	$4,697,687.82
	2018	34,997	$8,809,572.78	32,276	$8,215,049.12	33,054	$8,427,452.01	39,650	$10,167,798.90
	2019	51,241	$13,036,443.49	47,565	$12,109,135.49	48,256	$12,253,631.10	62,509	$15,808,797.49
Camcorder	2014	3,873	$1,225,199.72	3,812	$1,244,408.92	4,346	$1,536,974.19	5,691	$1,871,848.70
	2015	6,469	$2,304,019.65	6,475	$2,073,189.24	7,209	$2,529,194.52	8,332	$2,766,844.75
	2016	10,199	$3,452,156.37	9,996	$3,339,495.11	9,835	$3,385,661.95	11,220	$3,794,394.68
	2017	13,600	$4,719,651.07	12,977	$4,445,789.78	13,637	$4,586,985.06	16,568	$5,686,181.98
	2018	30,756	$10,425,741.77	29,016	$10,061,991.48	29,017	$9,849,105.88	35,183	$12,059,700.47
	2019	45,900	$15,459,486.09	42,599	$14,567,964.98	43,451	$14,740,206.14	55,083	$18,339,509.74
Computers	2014	1,343	$302,839.60	1,235	$285,463.66	1,659	$349,989.27	2,493	$503,542.66
	2015	2,723	$545,285.69	2,726	$555,012.38	3,170	$646,064.08	3,620	$733,129.43
	2016	4,622	$935,868.89	4,211	$859,932.09	4,579	$969,684.35	6,408	$1,405,264.26
	2017	8,402	$1,906,405.31	7,673	$1,740,392.33	8,479	$1,920,150.64	10,072	$2,290,980.27
	2018	18,840	$4,285,100.36	19,734	$5,003,619.59	23,240	$6,809,161.08	27,812	$8,078,594.30
	2019	42,608	$13,540,748.18	47,842	$15,212,365.79	48,512	$15,856,387.06	49,774	$18,580,500.85
Media Player	2014	11,717	$3,427,197.08	11,618	$3,268,394.69	12,688	$3,585,613.72	14,943	$4,699,372.86
	2015	12,067	$3,851,602.64	10,264	$3,313,925.34	11,422	$3,727,532.88	13,379	$4,239,470.35
	2016	16,372	$5,239,161.93	15,304	$4,981,985.38	15,931	$5,098,038.72	18,700	$6,084,901.35
	2017	22,232	$7,239,959.35	20,932	$6,793,086.13	22,342	$7,327,768.51	26,929	$8,744,386.06
	2018	49,727	$16,237,411.66	46,876	$15,328,987.92	46,539	$15,106,657.25	56,169	$18,329,370.14
	2019	75,653	$24,359,918.98	71,782	$22,424,839.93	73,367	$22,972,381.89	94,981	$29,691,094.60
Stereo Systems	2014	15,000	$3,320,151.66	13,259	$3,026,456.46	10,607	$2,738,062.03	14,541	$3,790,147.58
	2015	15,336	$3,940,880.70	15,855	$4,221,474.37	16,581	$4,335,701.13	19,572	$5,198,463.91
	2016	24,391	$6,386,373.31	23,490	$6,129,084.75	24,081	$6,272,801.32	28,301	$7,407,160.45
	2017	32,881	$8,668,607.57	31,495	$8,333,870.71	33,529	$8,865,130.50	40,945	$10,737,002.54
	2018	75,173	$19,613,536.49	70,247	$18,469,311.10	71,404	$18,708,631.65	85,893	$22,552,458.60
	2019	109,642	$28,823,345.74	102,252	$26,835,864.00	104,609	$27,364,335.98	135,248	$35,556,080.97
Televisions	2014	3,925	$1,566,904.80	3,748	$1,577,021.42	4,301	$1,796,316.25	4,431	$1,540,975.20
	2015	1,437	$1,096,511.50	1,331	$1,074,107.17	1,371	$1,181,674.36	1,668	$1,385,646.13
	2016	2,070	$1,686,377.91	1,845	$1,481,739.79	1,936	$1,654,188.98	2,520	$2,036,387.03
	2017	2,745	$2,221,511.35	2,580	$2,088,221.54	2,838	$2,249,358.96	3,379	$2,736,634.46
	2018	6,328	$5,086,418.10	5,740	$4,520,209.15	5,895	$4,834,560.13	6,977	$5,601,668.29

You can use the Select at runtime option to enable any of these output formats. When content using the Select at runtime option is added to a visualization as external content, a filter control appears at the top of the page, allowing you to select an output format. Items on the page that use Select at runtime are re-run in the selected output format.

Overview of In-Document Analytics

Setting the output format of a stand-alone chart or report to AHTML provides In-Document Analytic capabilities at run-time. Content that uses In-Document Analytics provides users with an interactive interface that allows the generation of real-time, dynamic charts and reports. Its versatility not only allows you to interact with your content by adding filters, sorting data, and generating new content, but it also allows for offline content access. You can package a data set with a combination of analytical views, resulting in highly intuitive and interactive self-service business intelligence. This gives you an edge in presentation and analysis, making it easy to develop and share concepts, ideas, and scenarios. An interactive report is a self-contained report, meaning that it contains all the data and JavaScript® within the HTML output file. Packaging the data and the interactive functions in the HTML file also makes the output highly compressible for email and transparent to security systems. If you are working with a larger data set, you can also zip the output files to reduce the file size when sending them through email.

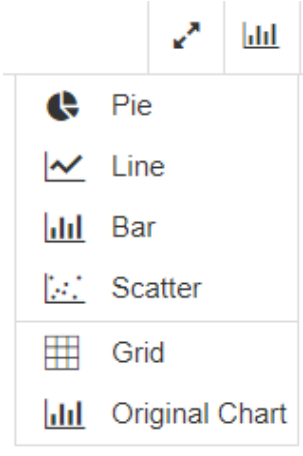
Note: You may need to zip interactive content output files to reduce the file size, and send them through your email client.

Your users can explore and interact with your data using various analytical tools such as sorting, filtering, calculations, roll-ups, and pivoting. They can also experiment with different scenarios using various options.

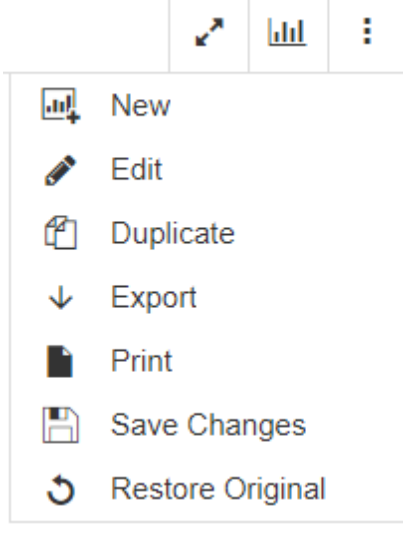
All of the interactive content that you create functions independently of a server, and is portable, making it easy for your users to work with and analyze complex data without requiring the use of an external application, such as Microsoft Excel. With two types of users (developer and end user), the roles in development and delivery of materials are clear. The end user interacts with the content that the developer creates and deploys. They can obtain content without any additional plug-ins or programs should they choose to access your content remotely or offline, independent of a server.

Note: Each artifact that you create at run time is given a unique number for easy identification. This number is incremental but not consecutive, and is assigned automatically.

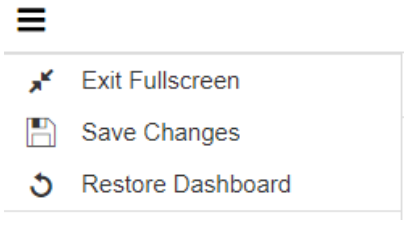
When you run content using an AHTML output format, you can review and continue to develop it using the available menus. For example, when you run a chart, you can select the chart menu to change the type of chart you are showing, as shown in the following image.



To add a new chart or edit your content, you can use the options available from the vertical Ellipsis menu, which is shown in the following image.



When you view your report or chart at full screen, a hamburger menu also displays, as shown in the following image. From this menu, you can exit full screen, save changes, or restore the dashboard.



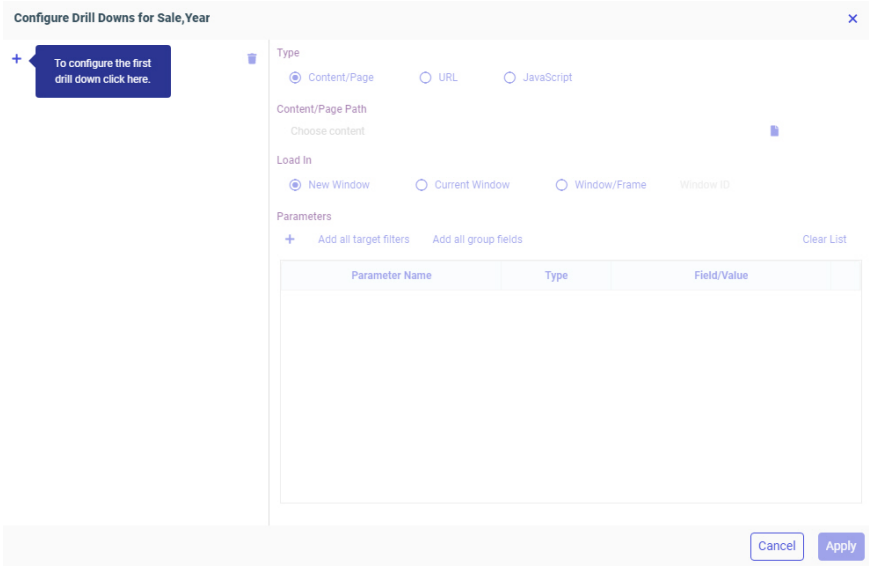
Adding Drill-Down Links to Content

Drilldowns are a powerful feature that allows users to navigate from one content item to another, providing access to additional, related information at run-time. Drill-down links can also be used to pass parameters, so that the target content is automatically filtered for the value that a user selects, allowing you to maintain context between items. By linking content with drilldowns, you can vastly expand the amount of information that is available from a single chart or report.

In a report, drill-down links are provided as hyperlinked values. In a chart, drill-down links are executed when you click a section of the chart. When you add multiple drill-down links to a single field, you can select one from the tooltip menu that results when you click a report hyperlink or point to an area of a chart.

You can create different types of drill-down links to connect to different types of target items. You can use the link to open a selected content item or page, connect to a URL, or execute a JavaScript function.

To create drill-down links for a field, right-click a field in any bucket of a report, or in the default measure bucket of most chart types, and click *Configure drill downs*. The Configure Drill Downs dialog box opens, as shown in the following image.



To create a drilldown, click the plus icon. Next, determine the type of content that you want to link to. The information that you provide to create the drilldown differs depending on the target type.

Select *Content/Page* to link to another procedure, such as a chart or report, or to a page. Select the item from your Db2 Web Query repository, and choose where it should load. You can load the target content in a new window or browser tab, the same window as the current item, or you can specify a window or frame by name.

Note: Drill-down links are functional at design time. When the drill-down target location is Current Window, clicking a drill-down link in the canvas opens the target in a new browser tab or window so that Db2 Web Query Designer can stay open. When you run your content, drilldowns with a target location of Current Window load in the window where the drilldown was accessed.

You can also configure the drilldown to pass parameter values to the target item. If the target uses dynamic parameters, such as prompted filters, matching parameters with the same name are automatically created to pass the value that a user clicks. The selected value will be applied to the target content when it loads.

To manually add parameters to pass through the drilldown, click the plus sign in the Parameters section of the Configure Drill Downs dialog box. First, provide a parameter name, which should match the names of amper variables in the target content. Using the menu in the Type column, set whether the parameter should pass field values, a static value that you set, or the value set for a global variable in your environment. Finally, select a field, enter a value, or select a global variable to pass. You can automatically create all parameters in the target content by clicking *Add all target filters*, or create parameters for all sort fields in your parent content – that is, the chart or report that you are currently editing – by clicking *Add all group fields*. You can then delete individual parameters if you want, or delete all parameters by clicking *Clear List*. Drill-down parameter options are shown in the following image.

To link to a web page through a URL, select the *URL* radio button. The URL must include the protocol, for example, *http* or *https*, if it is an external link. Otherwise, the URL will be interpreted as a partial URL within your Db2 Web Query environment.

Next choose where the target URL should load, whether in a new window, the same window, or elsewhere. Finally, add any parameters. If you add parameters, they are appended sequentially to the end of the URL as key-value pairs using a GET request in the following format:

```
?parameter_name1=value1[&parameter_name2=value2 ...
&parameter_namen=valuen]
```

where:

parameter_name1, parameter_name2, parameter_namen

Are parameter name values, specified in the Parameter Name column of the Configure Drill Downs dialog box.

value1, value2, valuen

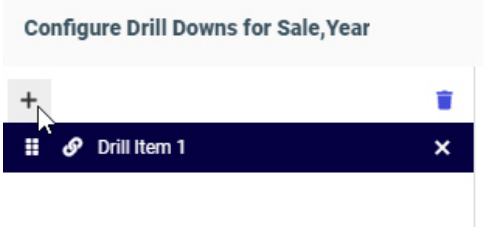
Are parameter values. They can be field values passed from the report, or static values. The field or static value is specified in the Field/Parameter/Value column of the Configure Drill Downs dialog box.

The question mark (?), ampersands (&), and equals signs (=) are added to the URL automatically, so you do not need to include them when setting up the drilldown.

To execute a JavaScript function from the drill-down link, select the *JavaScript* radio button. In the JavaScript Function text box, supply the name of the JavaScript function. The function and the arguments that it accepts must already be defined for the function to work. You can define custom JavaScript functions in a .js file on your environment, which you can create using the text editor or upload from your machine, then reference that file using the SET JSURLS command. This command can be applied globally by adding it to edasprof.prf on the Db2 Web Query Server, so the functions in the file are always available to whoever has access.

In the Request Parameters area, add each argument, in order, as a separate row. These arguments can be static values, by setting the Type column to *Value*, or dynamic field values, by setting the Type column to *Field*. Once the type is set, enter the value or select the field whose value should be used as the argument.

You can manage your drilldowns from the pane at the left side of the Configure Drill Downs dialog box. You can create multiple drilldowns that you can access from the same hyperlink in a report or the same area of a chart. To create more drill-down links that you can select from the same location, click the plus sign above the list of drilldowns in the Configure Drill Downs dialog box, as shown in the following image.



When you click a link in a report or an area of a chart that includes multiple drilldowns, a menu appears, listing them all.

Note: The menu for multiple drilldown links on a single field does not display if a report is created as part of a page. They display properly for charts, stand-alone reports, and reports added to a page as external content.

To rename a drilldown link, double-click the title in the drilldown list, and type a new title. These titles appear in the tooltip in your content when selecting a drilldown to execute. Drag a drilldown using the handles to the left of the drill-down title to change the order in which your drilldowns appear.

If you want to remove a drilldown, click the X next to its name. To remove all drilldowns, click *Remove All Drill Items*  .

Procedure: How to Pass Parameter Values to a Page

You can drill down from a chart or report to a page created in Db2 Web Query Designer. Drill-down parameters can be passed to the page to apply their values to any page filters.

1. Create and save a page that includes prompted filters. These filters can be created by adding parameterized external content to an assembled page and clicking *Add all filters to page* on the Filters tab of the sidebar, or can be created in a page with new content by dragging a field to the Filter toolbar.

   The filters in this page will be populated with values passed from a drill-down report.

2. Create a new report.

   On the Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens.

3. Select the same data source that was used to filter the page, and click *Select*.

   The Db2 Web Query Designer canvas appears.

4. Create a chart or report that is sorted by the same fields that are used as filters in the page. For example, if the page is filtered by Customer Business Region and Sale Year, create a report with those fields in the row bucket. Add other measures and dimensions to your content based on your needs and preferences.

5. Determine the measure field in a chart, or any field in a report, to which to add drill-down links.

   If you are passing multiple parameter values through the drilldown, selecting a field in the chart or report with additional sort values under it may help clarify to the user which values will be passed.

For example, in the report shown in the following image, the Sale Year field is the secondary sort field while Customer Business Region is the primary sort field, so each row in the Sale Year column represents a sale year and a business region.

Customer Business Region	Sale Year	Quantity Sold	Revenue
EMEA	2014	115,367	$32,608,030.34
	2015	132,574	$39,630,841.14
	2016	193,158	$57,591,488.69
	2017	255,468	$76,647,406.85
	2018	464,797	$140,440,022.62
	2019	699,498	$215,398,344.26
North America	2014	46,386	$13,060,621.95
	2015	61,246	$18,287,269.34
	2016	92,483	$27,473,407.52
	2017	147,038	$43,907,888.55
	2018	426,176	$128,662,736.78
	2019	694,386	$212,755,358.69
Oceania	2015	56	$14,736.30
	2016	165	$48,743.31
	2017	374	$104,323.54
	2018	1,321	$424,709.91
	2019	6,481	$1,970,040.66

In this case, adding the drill-down links to the Sale Year column would allow you to choose from all of the available Customer Business Region and Sale Year values, whereas adding the links to the Customer Business Region column would only allow you to pass parameter values for the first sale year in each business region group. As an alternative to creating drilldowns on the lower level sort field, you could ensure that all parameter values are passed from a report by using repeating sort values. On the Content picker, select the *Grid* report layout option.

6. Right-click the field to which you want to add drill-down links and click *Configure drill downs*.

   The Configure Drill Downs dialog box opens.

7. Create a new drilldown by clicking the plus sign, *Create New Drill Item*, icon in the pane on the left.

   The Content/Page drilldown type, which we are using to drill to a page, is selected by default.

8. In the Content/Page Path text box, click the file icon to select the page that you want to drill to.

   Notice that the Parameters grid is automatically filled based on the filters in the selected page.

9. In the Load In area, select the location where the target page should run. It can be the same window where the report was run, in a new browser tab, or a user-specified location.

10. In the Parameters section, check whether the parameters that you want to pass have already been added. To add a new parameter, click the plus icon, and proceed with the following steps.

    a. In the Parameter Name column, type the name of the parameter. Typically, this matches the field name. You can check the parameter names used in an assembled page by clicking the *Info* button.

    b. From the Type menu, choose whether the value to pass should be a field value, associated with the link that a user selects, the value of a global variable defined in your environment, or a constant value.

    c. If you selected *Field*, use the Value menu to select a field from your content. If you selected *Constant*, type a constant value to pass to the page.

11. Repeat step 11 for all parameters whose values you want to pass to the target page, or click the X in the right-most column of the Parameters grid to remove unneeded parameters.

12. Double-click the default drill-down name, for example, *Drill Item 1*, to change the name of the drilldown. This name appears in the tooltip when you point to a drill-down link, or click a link that includes multiple drilldowns.

13. Click *Apply* to create the drilldowns.

    In a report, drill-down links are added for each value of the field where the drilldown was created. In a chart, drilldowns are added to each section.

14. Run the chart or report.

15. At run-time, drill down to the target page.

    - ❑ If you created a chart, click a section of the chart. If there are multiple drilldowns, select the drilldown that you just created.
    - ❑ If you created a report, click a drill-down link. If that field of the report has multiple drilldowns associated with it, select the drilldown that you just created.

16. The page opens in a new browser tab or window. Notice that the value or values represented by your selection in the parent content item are applied as filter values in the page.

Procedure: How to Pass a Global Variable Value Through a Drilldown

A global variable is a variable that maintains its value for the duration of a Db2 Web Query session or until a different value is assigned. Global variables are identified by double ampersands. As opposed to local amper variables, which you can pass different values from a drilldown to filter target content based on the value that you select, the best use for global variables is to maintain a single consistent value as you run different content items. In this example, we will set a global variable to the current date, allowing us to filter target content for that date value by invoking the global variable.

The advantage of using a global variable is that its value is not contingent on the content item that is passing it. A local variable, when passed through a drilldown, must be set in the parent procedure, so a field must be added that contains values that the local variables can pass. This is not the case for a global variable, which is set externally to the procedure. On the other hand, however, since the global variable is not set by the procedure that passes it, the drill-down value that you select will not affect the value that is passed unless the global variable is set to be dependent on a local variable.

The drill-down parameter options in Db2 Web Query Designer provide a list of global variables that are already defined in your environment, so the first step is to set the global variable value. Next, you can create target content filtered by a field that can accept that value, and finally you can create the drill-down content that will pass the global variable to the target.

1. On the Db2 Web Query Home Page, click *Workspaces* to open the Workspaces view.
2. On the Action bar, click *Other*, and then click *Text Editor*.

   The New Text Resource dialog box opens.
3. Click *FOCEXEC (fex)* to create a new Db2 Web Query procedure using the text editor.

   This procedure will set a value for a new global variable.
   The text editor opens.
4. In the text editor, type the following:

   ```
   -SET &&CURRDATE = &YYMD;
   -TYPE &&CURRDATE
   ```

   The first line sets the value of a new global variable, *&&CURRDATE*, to today's date, represented by &YYMD. &YYMD is a system variable that always returns the current date in a YYMD (year-month-day) format. You can change *CURRDATE* to whatever you want, since it is just the name of the global variable that you are creating.

The second line displays the value of the global variable, &&CURRDATE in this example, as text in the output using the -TYPE command, so you can make sure that it has been set properly.

Click *Preview*  on the text editor toolbar. A new window opens with a message showing the result of the executed procedure. There is no actual output, but it should show the current date in YYMD format under the Detail area.

The global variable is now set for the duration of the Db2 Web Query session. To ensure that the variable is always set when a user signs in, an administrator can set this procedure to run automatically using a setting in the Db2 Web Query Administration Console. To configure this setting, complete the following steps:

1. Save the procedure that sets the global variable and return to the Db2 Web Query Home Page.
2. In the Workspaces area of the Db2 Web Query Home Page, navigate to the location where you saved the procedure. Right-click it and click *Properties*.
3. Copy the value of the Path property, which is the IBFS path of the procedure that sets the global variable value in your environment.
4. On the Db2 Web Query Home Page banner, open the *Settings* menu and then click *Administration Console*.

   The Db2 Web Query Administration Console opens.
5. In the navigation pane on the Configuration page of the Administration Console, click *Other*.
6. Paste the path of the procedure that sets the global variable value into the Paths to be executed on user Sign-in field.
7. Click *Save*.

   When a message appears indicating that the new setting has been saved successfully, click *OK* and close the Administration Console.

5. Create a content item that will be the target of a drilldown that passes the global variable. We will create this item first since we need to be able to select a target item when we create the drilldown.

   In this case, since the global variable that we have created is set to a date value, we will want to create target content that is filtered by a date field.

   On the Db2 Web Query Home Page, click *Visualize Data* to create a new chart or report.

   Db2 Web Query Designer opens, and you are prompted to select a data source.
6. Navigate to and select a data source that includes a date field with data for the current date, and then click *Select*.

The Designer canvas displays.

7. From the field list, drag a date field to the Filter toolbar to create a dynamic parameter filter. You do not need to select values for this filter control, since they will be supplied by the global variable.

   The date control in Designer provides a date range, so when we pass the global variable to the filter parameter, we will pass it as both the start and end date to filter our content to show data for just the current date.

8. Add fields to your content, and, optionally, change the content type and add more parameter filters. You can also add more content items to create a page by clicking *Add visualization*. All items on this page are affected by the filter controls on the Filter toolbar. You can use drilldowns to pass local parameter values to these filters alongside the global variable value that we will pass.

   When you are finished creating the target content, click *Save*.

9. Create a new chart or report that will include drill-down links that pass the global variable that we configured to our target item.

   On the Db2 Web Query Home Page, click *Visualize Data*.
   Db2 Web Query Designer opens, and you are prompted to select a data source. If you added any filters in addition to the one that will receive the global variable value, you should use the same data source as your target item.

10. Change the content type and add fields to create a content item to which you will add your drilldowns. If you added any filters to the target item in addition to the one that will receive the global variable, you should make sure that the fields used for those filters are added to this content item.

11. Right-click a dimension field in a report or a measure field in chart and click *Configure drill downs*.

    The Configure Drill Downs dialog box opens.

12. Create a new drilldown by clicking the plus sign, *Create New Drill Item*, icon in the pane on the left.

    The Content/Page drilldown type, which we are using to drill to the target content item, is selected by default.

13. In the Content/Page Path text box, click the file icon to select the item that you want to drill to.

    Notice that the Parameters grid is automatically filled based on the filters in the selected page.

14. In the Load In area, select the location where the target page should run. It can be the same window where the report was run, in a new browser tab, or a user-specified location.

15. In the Parameters section, check whether the parameters that you want to pass have already been added. Parameters for start and end dates for a date range filter should appear automatically since the filter was created in the target item.

    For both of these parameters, complete the following steps:

    a. From the Type menu, select *Global variable*.

       A drop-down menu appears in the Field/Value column.

    b. In the Field-Value column, select the global variable that you defined earlier.

16. Repeat these steps for the second date parameter. Filters for date fields create ranges with a start and end date. by default. By setting these to the same date limits the date range to a single day.
17. Set values for any other parameters in the target report by specifying the field whose value should be passed based on the value that you select to execute the drilldown, or a static value that you always want to pass.
18. Click *Apply* to create the drilldowns.
19. On the Visualization toolbar, click *Run in new window* to run your content and test the drilldowns.
20. Execute a drilldown. It should run the target content, which should be filtered for the current date as specified by the global variable that was passed.
21. If everything works as expected, return to Db2 Web Query Designer and save your content.

Procedure: How to Drill to a Webpage From a Selected Value

When you pass parameters using a URL drilldown, they are sent using GET requests. You can use this functionality to access different web pages based on the value that you select from your content.

In this example, we will use a URL drilldown to open a Wikipedia article for the country that we select.

1. In Db2 Web Query Designer, create a chart or report using a field with country names as a sort field.
2. In a chart, right-click a measure field or, in a report, right-click the field to which you want to add drill-down links, and then click *Configure drill downs*.

   The Configure Drill Downs dialog box opens.

3. Create a new drilldown by clicking the plus sign, *Create New Drill Item*, icon in the pane on the left.
4. Change the Type of the drilldown to *URL*.

5. In the URL text box, type the root URL to which the GET request will be added. For this example, type *https://en.wikipedia.org/w/index.php*.

   A question mark, followed by the parameter name and value, will be appended to this URL.

6. Optionally, change the target location of the URL from *Self*, which opens the target URL in the same window or tab as the drill-down chart or report, to *New Window*, which opens the target URL in a new tab or window, or *Window/Frame*, which opens the URL in a user specified container.

7. Add a new parameter to the drilldown.

   a. Click the plus sign icon under Parameters to add a new parameter.

   b. In the Parameter Name column, type the name of the parameter. The URL that we are using in this example accepts a parameter called *title*, which is the name of the Wikipedia article to open.

   c. Leave the Type column set to *Field*. We want to pass dynamic field values through the URL drilldown so that the value that we click is reflected in the article that opens on click.

   d. Select the field whose value you want to pass. For this example, select the country field that you added to your chart or report.

8. Optionally, in the pane on the left, double-click the default drill-down name, for example, *Drill Item 1*, and type a new name for your drilldown. This name appears in the tooltip when you point to a drilldown link in a report, or when there are multiple drilldowns on a single field.

9. Click *Apply* to create the drilldown.

10. Click *Run in new window* to view your content at run time.

11. Click a hyperlink in a report or a section of a chart. The Wikipedia article opens for the value that you clicked.

Procedure: How to Execute a JavaScript Function From a Drilldown

You can trigger a JavaScript function when using a drilldown in your content. The parameters defined when setting up the drilldown are used as the arguments in the JavaScript function. This simple example uses the alert function, which requires no special setup or configuration, to display the dimension field value that a user clicks.

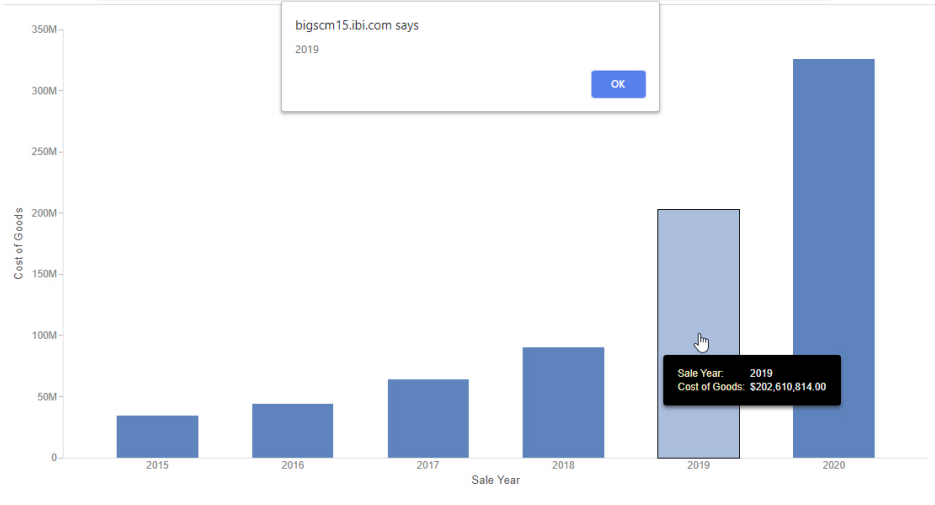
1. In Db2 Web Query Designer, create a new chart or report and add at least one measure field and one dimension field.

2. In a chart, right-click a field in the default measure bucket, or in a report, right-click the field to which you want to add drill-down links, and click *Configure drill downs*.

   The Configure Drill Downs dialog box opens.

3. Create a new drilldown by clicking the plus sign, *Create New Drill Item*, icon in the pane on the left.
4. Change the Type of the drilldown to *JavaScript*.
5. In the JavaScript Function text box, type *alert*, which is the name of the function used in this example. It opens a pop-up window displaying the value of the first argument as text.
6. Add a new parameter to the drilldown.
   a. Click the plus sign icon under Parameters to add a new parameter.
   b. To display a field value in the alert message, leave the Type column set to *Field*. Change the Type to *Value* to always display the same value in the alert.
   c. Select the field whose value you want to pass. It can be a measure field or a dimension field.
7. Optionally, in the pane on the left, double-click the default drill-down name, for example, *Drill Item 1*, and type a new name for your drilldown. This name appears in the tooltip when you point to a drilldown link in a report, or when there are multiple drilldowns on a single field.
8. Click *Apply* to create the drilldown.
9. Click *Run in new window* to run your chart or report.

   Your content runs in a new browser tab or window.
10. Click a hyperlink in a report or a section of a chart. An alert appears, displaying the value that you selected, as shown in the following image.



Procedure: How to Execute a Custom JavaScript Function From a Drilldown

With some additional configuration, you can execute a custom JavaScript function from a drilldown link. This provides significant flexibility in defining what occurs when a drill-down link is clicked. In this example, we have created a JavaScript function that opens a mailto URL, dynamically populated with an email address and first name from our data source. The first name will be added to the subject line of the email. Since the email address in a mailto URL is not supplied as a key-value pair, we cannot do this using a URL drilldown.

1. First, define the custom JavaScript function using the text editor.
   a. On the Db2 Web Query Home Page, click *Workspaces*.
   b. On the Action Bar, click the *Other* tab, then click *Text Editor*.
   The New Text Resource dialog box opens.
   c. On the *Web* tab, click *JavaScript (js)*.

      The text editor opens.
   d. Enter the code for your JavaScript function.

      In this example, the function to generate a mailto URL is called fnMail, and is coded as follows:

      ```
      function fnMail(Email,Name)
      {
      window.location = 'mailto:' + Email + '?Subject=Hello, ' + Name;
          }
      ```

      The two parameters that we will need to supply from the drilldown will be the email address, for the Email argument, and the first name, for the Name argument.
   e. Save the new JavaScript file to your Db2 Web Query Repository.
2. Create a new report using Db2 Web Query Designer. On the Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens.
3. Select a data source that includes email address and first name fields.

   In this example, we are using the wf_retail_lite.mas Master File, part of a sample dataset that can be added to your Db2 Web Query environment.
4. On the Content picker, change the content type to a report layout, either the *Standard Report* or *Grid* options.
5. Optionally, add filters to reduce the size of the report and the processing time that it requires.
6. Add the email address and first name fields to your report.

If you are using the wf_retail_lite Master File as your data source, in the Dimensions area, expand *Customer* and then *Full,Name*, then double-click *Email,Address* and *First,Name*.

7. Add one or more measure fields to the report.
8. Right-click a field, for example, the email address field, in one of the buckets, and click *Configure drill downs*

   The Configure Drill Downs dialog box opens.
9. Create a new drilldown by clicking the plus sign, *Create New Drill Item*, icon in the pane on the left.
10. Change the Type of the drilldown to *JavaScript*.
11. In the JavaScript Function text box, type *fnMail*, which is the name that we gave to the function used in this example.
12. Add the first parameter, which supplies an email address, to the drilldown.
    a. Click the plus sign icon under Parameters to add a new parameter.
    b. Leave the Type column set to *Field*. The recipient of the email from the mailto URL should change depending on the value that we click in the report.
    c. Select the field whose value you want to pass. In this case, it is the email address field.
13. Add the second parameter, which supplies an associated first name, to the drilldown.
    a. Click the plus sign icon under Parameters to add a new parameter.
    b. Leave the Type column set to *Field*. The first name shown in the subject of the email from the mailto URL should change depending on the value that we click in the report.
    c. Select the field whose value you want to pass. In this case, it is the first name field.
14. Optionally, in the pane on the left, double-click the default drill-down name, for example, *Drill Item 1*, and type a new name for your drilldown. This name appears in the tooltip when you point to a drilldown link in a report, or when there are multiple drilldowns on a single field.
15. Click *Apply* to create the drilldown.
16. Save the report and exit Db2 Web Query Designer.
17. Finally, we must tell our report request where the custom JavaScript function is defined. We can use the SET JSURLS command to specify the location of the .js file that we created earlier. This command can be added to the edasprof server profile so that it is available to all procedures. This step must be performed by someone with administrative privileges on the Db2 Web Query Server.

    On the Db2 Web Query Home Page, open the + menu and click *Prepare and Manage Data*. The Server Console opens.

18. Open the *Tools* menu  and click *Workspace*.

    The Server Workspace view opens.

19. On the resource tree, expand *Configuration Files*, then right-click *Server Profile - edasprof.prf* and click *Edit*.
20. On a new line, type *SET JSURLS=*
21. After the equals sign (=), in quotes, add the run-time URL for the .js file in which the function is defined, then close with a semicolon (;).

    The run-time URL uses the following format:

    ```
    http[s]://hostname:port/context_root/run/path_to_item
    ```

    where:

    hostname

    Is the name of the system where Db2 Web Query is installed.

    port

    Is the port number used by Db2 Web Query.

    context_root

    Is the context root used for your Db2 Web Query application. For example, webquery.

    path_to_item

    Is the IBFS path of the JavaScript file in your Db2 Web Query repository. You can find the path of a page by right-clicking it on the Db2 Web Query Home Page and clicking *Properties*. The file path is listed as the Path property.

    Slashes (/) between folder names should be retained literally instead of encoded in the URL, and the colon (:) should be removed after *IBFS*. For example:

    ```
    http://localhost:12331/webquery/run/IBFS/WFC/Repository/Retail_Sales/
    custom.js
    ```

    The full SET JSURL command may resemble the following:

    ```
    SET JSURLS='http://localhost:12331/webquery/run/IBFS/WFC/Repository/
    Retail_Sales/custom.js';
    ```

22. Save your changes to edasprof.prf.
23. Return to the Db2 Web Query Home Page and run your report, then click a drill-down link.

    A new email opens with the To address and Subject line already filled, with different values depending on the link that you click.

Procedure: How to Use a JavaScript Drilldown to Run a Chart or Report in a Target Panel on a Page

You can use a specific, pre-configured JavaScript function called portalDispatch to drill to a target chart or report, and run it an a specified target container on a page. This target container can be identified by a CSS class, which you can set using the Classes property for the content area within a container. The target chart or report, which you evoke to run in the target container, is referenced using the IBFS path, which you can find in the Path field when viewing the properties of an item on the Db2 Web Query Home Page. You can pass multiple items to multiple containers listed in sequence, and you can also pass the values of multiple fields from a single drill-down link to multiple parameters in the target item or items.

First, create one or more target charts or reports that you want to run when a drill-down link is clicked. You can add dynamic parameter filters to these items so that they are filtered based on the selected drill-down link. Next, create a chart or report with a drilldown that executes a JavaScript function called portalDispatch. The function arguments determine what items are run, and where they should run. Finally, assemble a page that contains the drill-down content and containers in which the target content can run. You must also ensure that the portalDispatch JavaScript function is recognized, by specifying the location of the .js file that contains it on the Db2 Web Query Server.

1. First, create one or more target charts or reports using InfoAssist.

   In order to receive parameter values from your drilldown, the target content must have filters suffixed with *.QUOTEDSTRING*. InfoAssist adds this modifier to parameter filters, while Db2 Web Query Designer does not.

   a. On the Db2 Web Query Home Page, in the Workspaces view, select *INFOASSIST* from the Action bar and click *Chart* or *Report*.

      InfoAssist opens, where you are prompted to select a data source.

   b. Select the data source that you want to use. You should use the same data source for the target content and the parent content containing the drill-down links.

   c. Create your target content by adding fields to the appropriate field containers, and applying your preferred customizations and styling options.

   d. Add parameter filters to your content, allowing it to be filtered based on the selected drill-down link. The field or fields used to filter the target content should be used as sort fields in the parent content that contains the drilldowns.

      Drag a field from the Data pane to the Filter pane. The Create a filtering condition dialog box opens. Double-click <*Value*> to open the filter value options, and change the Type to *Parameter*, then select the *Dynamic* radio button. Click *OK* to apply the filter options, and then click *OK* again to create the dynamic parameter filter.

      Repeat these steps to allow the target content to accept multiple parameters from a drill-down link.

e. Save the target chart or report.

f. Repeat steps 1a through 1e to create multiple target charts and reports. The portalDispatch function can invoke and pass parameters to multiple charts and reports at once.

2. Create the chart or report that will contain the drill-down links that run the target item or items created in step 1.

   a. On the Db2 Web Query Home Page, click *Visualize Data*.

      Db2 Web Query Designer opens, prompting you to select a data source.

   b. Select the data source that you want to use. This should be the same data source that you used for the target content in step 1.

   c. Create the drill-down parent content, which can be either a chart or report, by adding measure and dimension fields to the appropriate buckets.

      The dimension fields that are used as dynamic parameter filters in the target content should be used as sort fields in the parent content.

   d. Add drill-down links to your content. If you are creating a report, right-click a sort field, and if you are creating a chart, right-click a measure field. From the shortcut menu, click *Configure drill downs*.

      The Configure Drill Downs dialog box opens.

   e. Create a new drilldown by clicking the plus sign, *Create New Drill Item*, icon in the pane on the left.

   f. Select the *JavaScript* radio button to create a drill-down link that executes a JavaScript function.

   g. In the JavaScript Function text box, type *portalDispatch*. This is a pre-existing function that has already been defined in a file in the default Db2 Web Query installation.

   h. In the Request Parameters, click the plus button (+) to provide values of arguments in the JavaScript function. Each one occupies its own line in the parameter table. You will add at least 6 parameters, with extra parameter-field pairs if you want to pass multiple parameter values to the filters you set up in the target content.

      Specify the following parameter values in the JavaScript drilldown:

      1. Add a new parameter and change the Type to *Value* using the drop-down menu in the Type column. In the Field/Value column, type *drillRefresh*.

      2. Click the plus button again to add another new parameter. Change the Type to *Value* and type *self* in the Field/Value column.

      3. Add another new parameter. Change the Type to *Value*, and type the name of a CSS class that will identify the content area of the panel in which the drill-down target content will run.

For example, if you type *panel1* in the Field/Value column when configuring the drill-down parameters, you will need to add *panel1* to the Classes property of the content area of the container in the page where the drill-down content will run.

You can run multiple content items to multiple containers from the same drill-down link, in which case the class names should be separated by spaces. For example, *panel1 panel2*.

4. Add another new parameter. Change the Type to *Value*, and type or paste the IBFS path of the target content that you created in step 1.

   To find the IBFS path of an item, right-click it on the Db2 Web Query Home Page and click *Properties*. The IBFS path of the item is listed in the Path field. You can copy it to paste into the Field/Value column when configuring the parameter for the target content.

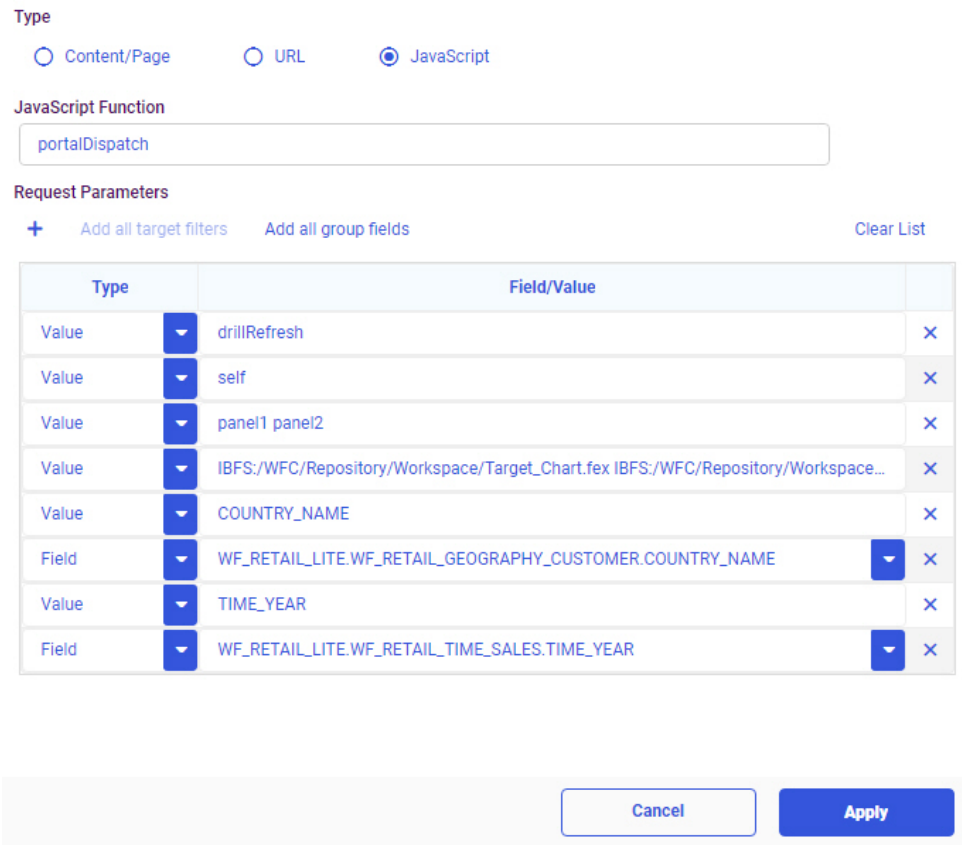
   If you want to run multiple content items, separate them with spaces. The order of the paths should be coordinated with the order of the container classes specified in step 2h3. The first listed target item runs in the container with the first specified class, the second listed item runs in the container with the second specified class, and so on.

5. Add another new parameter. Change the Type to *Value*, and, in the Field/Value column, type the name of the parameter used to filter the target content. By default, this is the name of the field.

   You can also see the parameter name when you point to the filter statement in the Filter pane in InfoAssist, when editing the target content that you created in step 1. It is listed as the Name property within the parentheses in the tooltip.

6. Add another new parameter. Leave the Type as *Field*, and, in the Field/Value column, select the field associated with the parameter name provided in step 2h5.
7. If the target content has multiple dynamic parameter filters, repeat steps 2h5 and 2h6 to supply the other parameters as name-field pairs.

8. Once you have added all parameters to the drilldown, your drill-down configuration may resemble the one shown in the following image.



Click *Apply* to generate the drill-down links in your chart or report.

Your content now executes the portalDispatch JavaScript function when you click a value that includes drilldowns.

i. Save your content and return to the Db2 Web Query Home Page.

3. Create a page to which you will add the content containing the drill-down links that you just created, and enough additional panels to run the content items that you set to run when a drilldown is executed, based on step 2h4.

On the Db2 Web Query Home Page, click the plus button and then click *Assemble Visualizations*.

Db2 Web Query Designer opens, allowing you to create a page from existing content.

4. You are first prompted to select a page template. You can select one of the preset options, or select *Blank* to add your own containers to the page.

   The Designer canvas opens.

5. Assemble the page where you will be able to load the target content created in step 1 after clicking a drill-down link in the item created in step 2.

   a. With the Content tab selected on the sidebar, navigate to the item that you created in step 2, and drag it into a container or an empty area of the page.

      The item with the drilldowns displays on the page. Resize it as needed.

   b. Add a container for each drill-down target item created in step 1. The container can be empty, or contain an item that will be replaced with the drill-down target item. If you selected a page template, there may be containers available already. Note that you can have these items run in separate tabs, accordion panels, or slides of multi-content container.

   c. Select the content area of a target container by clicking inside it. On the *Setting*s tab, in the Classes text box, type the name of the first class that you defined in step 2h3.

      Repeat this step for any additional contains in which you want to run other content items, specified in step 2h4, using the class names defined in step 2h3.

6. Now that the content has been added and the containers have their classes set, save the page.

7. Finally, we must tell our report request where the custom JavaScript function is defined. We can use the SET JSURLS command to specify the location of the .js file in the Db2 Web Query installation that includes the portalDispatch funciton. The SET JSURLS command can be added to the edasprof server profile so that it is available to all procedures. This step must be performed by someone with administrative privileges on the Db2 Web Query Server.

   a. On the Db2 Web Query Home Page, open the + menu and click *Prepare and Manage Data*.
   The Server Console opens.

   b. Open the *Tools* menu  and click *Workspace*.

      The Server Workspace view opens.

   c. On the resource tree, expand *Configuration Files*, then right-click *Server Profile - edasprof.prf* and click *Edit*.

   d. On a new line, type *SET JSURLS = '/webquery/tools/portalcanvas/iframeinterface.js'*

      The partial URL points to the location in your Db2 Web Query installation where the portalDispatch JavaScript function is defined. Note that if the context root of your installation is not webquery, you must replace this part of the path with the custom context root that you are using.

e. Save your changes to edasprof.prf.

8. Now that the JavaScript function is enabled, return to the Db2 Web Query Home Page, and run the page. Right-click the page, and click *Run in new window*.

   The page runs in a new browser tab. Click a drill-down link in the parent item created in step 2. One or more target items, created in step 1, run in another container on the page. These items are also filtered based on the value that you clicked, since you specified the parameter name and field when setting up the JavaScript function.

9. Optionally, click more drill-down links to update the filter values applied to the target content, or click the *Refresh* button on the page toolbar or container menu to reset the contents of the page.

Generating a Data Extract or Image From Content

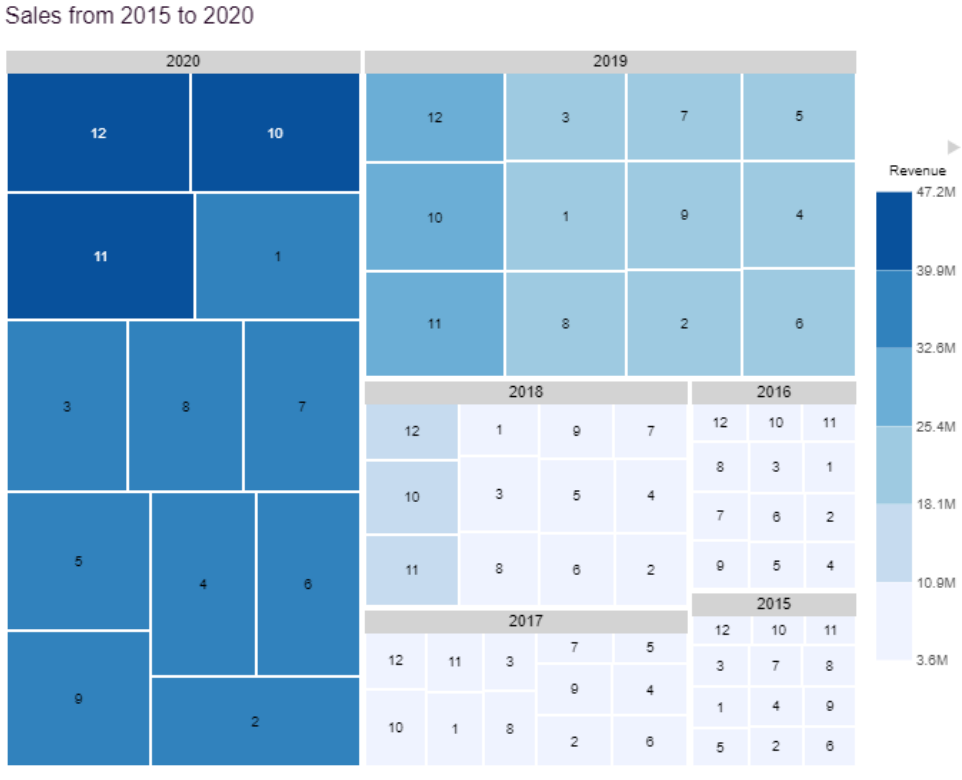
In addition to the output formats that you can use when running your content, you can export a snapshot of a single chart or report as a data extract in an Excel spreadsheet, or as a .png image, which are downloaded from your browser. This allows you to quickly generate a representation of your content at any time, in a format that can be easily saved and distributed.

To generate the image or data extract, click the *Application* menu and, in the Export As section, click *Data* or *Image*. The file is downloaded using your browser.

When you export a data extract of your chart or report, it is downloaded as an Excel spreadsheet with the data displayed as a tabular report. This can help identify the precise values that are graphically represented in your chart. A spreadsheet is also easy to distribute. The following image shows part of the spreadsheet created by exporting a treemap chart as a data extract.

	A	B	C	D	E
1	Sale Year	Sale Month	Revenue	Quantity Sold	
2	2015	1	$3,874,651.96	14,128	
3		2	$3,592,608.63	13,362	
4		3	$3,977,546.75	14,668	
5		4	$3,648,111.77	13,403	
6		5	$3,704,586.77	13,671	
7		6	$3,694,435.21	12,991	
8		7	$4,020,855.35	13,637	
9		8	$4,126,310.80	13,561	
10		9	$3,688,054.34	13,095	
11		10	$4,794,720.40	16,292	
12		11	$4,574,636.32	15,917	
13		12	$5,268,550.91	18,692	
14	2016	1	$4,857,824.42	16,428	
15		2	$4,595,194.63	15,093	
16		3	$4,923,408.26	16,488	
17		4	$4,422,610.34	14,770	
18		5	$4,586,992.98	15,562	
19		6	$4,856,111.47	16,382	
20		7	$5,075,337.19	16,945	
21		8	$5,133,075.08	17,061	
22		9	$5,031,634.54	16,629	
23		10	$5,826,745.45	19,620	
24		11	$5,788,867.16	19,277	
25		12	$6,043,161.45	20,360	
26	2017	1	$7,528,276.32	25,445	
27		2	$7,020,137.82	23,245	
28		3	$7,489,822.31	25,298	
29		4	$6,811,513.41	23,095	

When you export an image, a snapshot of the item is taken as it currently exists, and saved in .png format. Headers, footers, and legends are included in the image, but external items such as filter controls are not. The following image, showing a treemap chart, was exported directly from Db2 Web Query Designer.



Once exported, you can open the image using a program on your machine capable of opening .png images, distribute the image, and even use it as a thumbnail for your content once you save it. To set a thumbnail, right-click the saved chart or report on the Db2 Web Query Home Page and click *Properties*. On the *Advanced* tab, select the *Embedded* thumbnail option and browse to the location where the exported image was saved. The thumbnail makes it easier to identify a content item on the Db2 Web Query Home Page, or in the Resources tree when assembling a visualization in Db2 Web Query Designer.

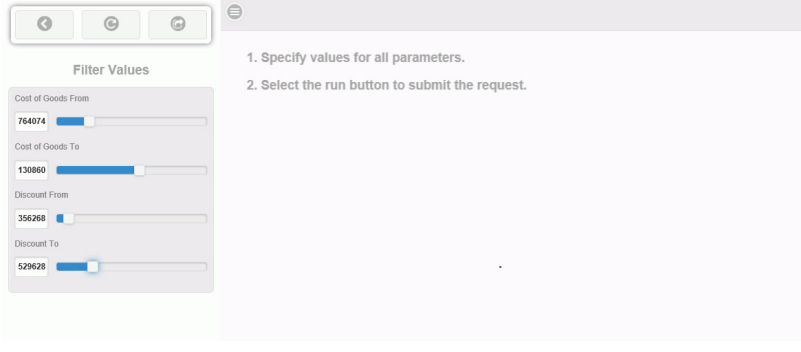
Previewing Content

As you create content and pages in Db2 Web Query Designer, you can preview them to see how your data displays in the chart, or to check the styling, run-time behavior, and filtering before publishing or sharing it with others. At any point in the development of your visualization, click *Run in new window*  .

Clicking *Run in new window* runs the visualization in a new browser tab, allowing you to view your content at run-time while continuing to edit it in a separate window. If you click *Run in new window* again, the content is reloaded in the same new tab.

Once it is saved, you can also run your content from the Db2 Web Query Home Page by right-clicking it and clicking *Run*.

When you preview stand-alone charts and reports that contain required filter prompts, you are presented with an Autoprompt page. You can use the filter controls to set values for each filter, as shown in the following image.



Generating Analytic Insights in Db2 Web Query Designer

You can now easily run advanced analyses and generate visualizations and narratives on your data sets, without manually preparing and analyzing your data, or having prior knowledge of data science or statistics.

With one click, the new Automated Insights capabilities in Db2 Web Query Designer recognize trends in your data, generate customizable visualizations as charts with natural language headers, and categorize the charts into tabs. You can add these charts to the Designer canvas and build a page, or add them to existing pages or dashboards.

Procedure: How to Access Automated Insights

You can access the Automated Insights capabilities in one of the following ways:

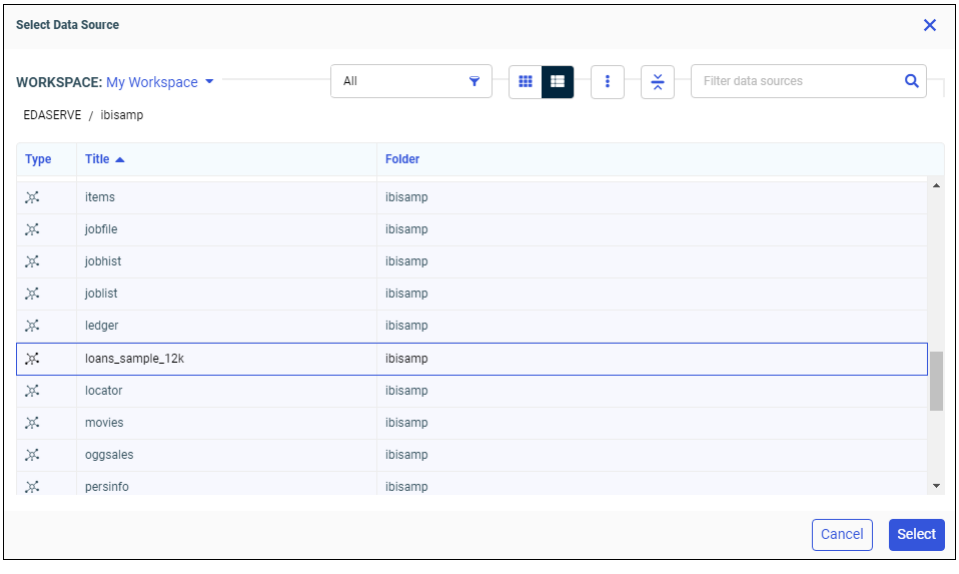
- **In Db2 Web Query Designer.** From the Db2 Web Query Home Page, click *Visualize Data* and then select a data source from the dialog box.
- **After Uploading a Data File.** From the Db2 Web Query Home Page, click *Get Data*, select a file type, select a data source from the dialog box, click *Load*, and then click *Visualizations*.
- **After Connecting to a Data Source.** From the Db2 Web Query Home Page, click *Get Data*, click a configured adapter, click an available connection, select a data source from the dialog box, and then click *Add*.

Procedure: How to Generate Analytic Insights

You can generate insights on any data that you have opened in Db2 Web Query Designer.

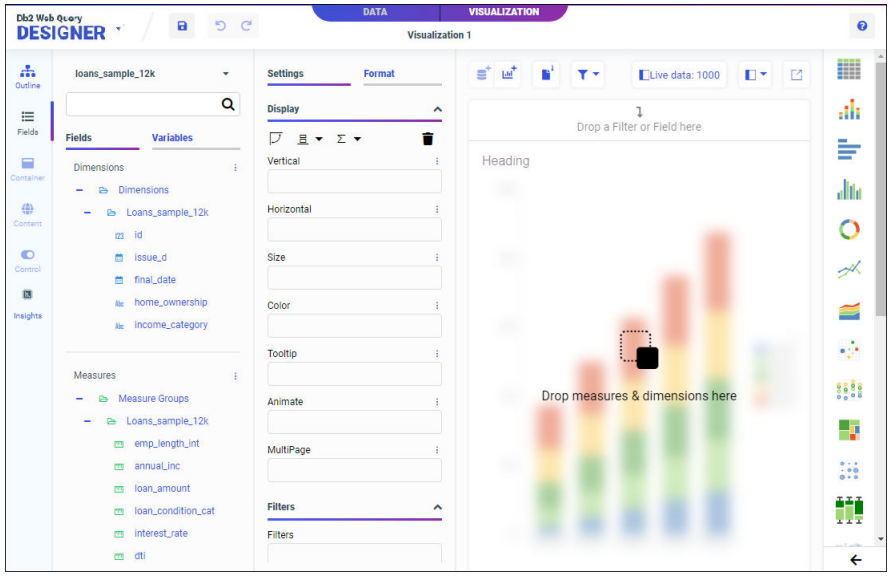
1. From the Db2 Web Query Home Page, click *Visualize Data*.

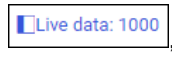
   The Select Data Source dialog box opens, as shown in the following image.



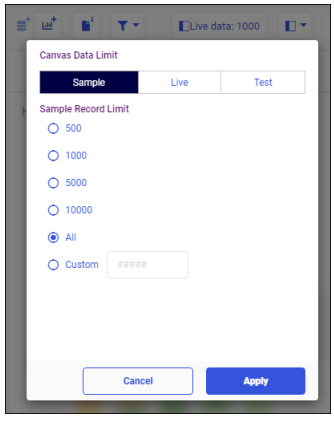
2. Select a data source from which you want to generate insights.

The Designer Visualization tab opens, as shown in the following image.



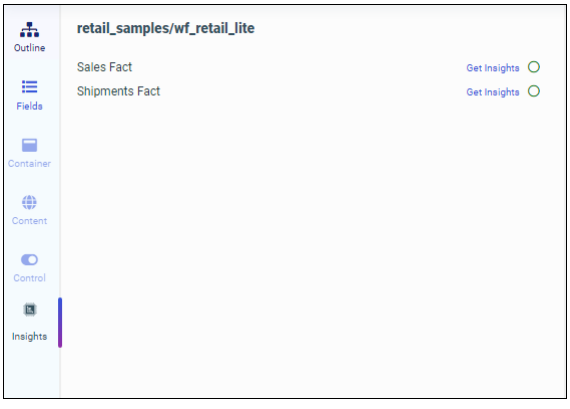
Note: To ensure the most meaningful insights, set the canvas data limit to Sample data: All. From the Visualization toolbar, click the data settings button 

, click the dialog *Sample* tab, select *All*, and click *Apply*, as shown in the following image:

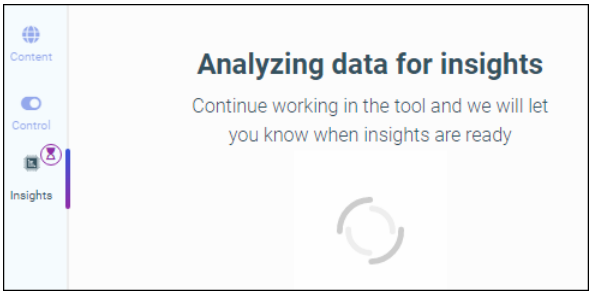


3. From the sidebar, click *Insights*.

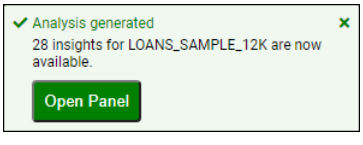
Note: If your data set contains multiple tables, you are given the option to select the table from which you want to generate insights, as shown in the following image.



The Insights panel opens and begins analyzing your data, as shown in the following image. You can continue working in Designer while your data is being analyzed.



A pop-up message appears to alert you when your insights are ready, as shown in the following image.



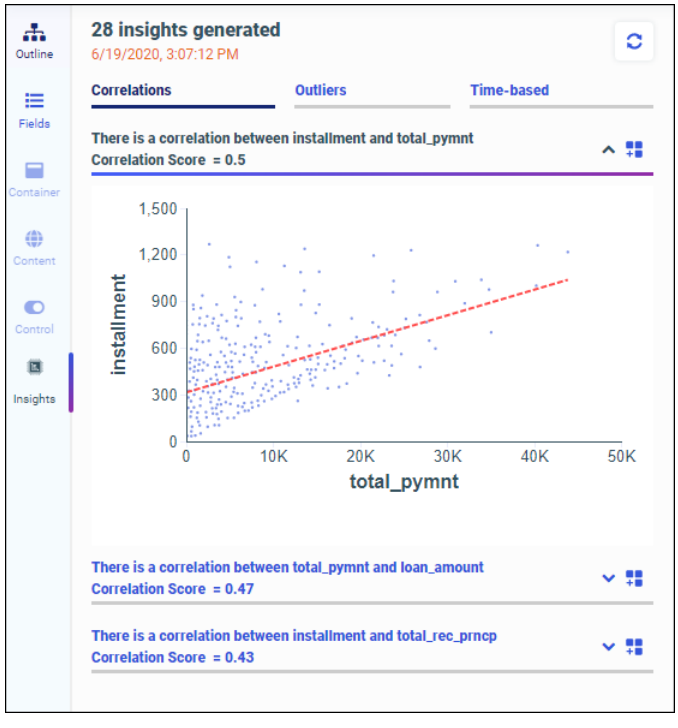
The panel title area displays the total number of visualizations generated, and a time stamp indicates when they were generated. Visualizations are generated as charts, and are categorized into different tabs. If your data is dynamic, you can click the refresh icon to gain updated insights.

Each chart toolbar includes an automated, header narrative that explains the trends in your data. The toolbar also includes icons that allow you to copy your chart to the Designer canvas, and to expand or collapse your chart.

Depending on your data set, your charts can by categorized as follows:

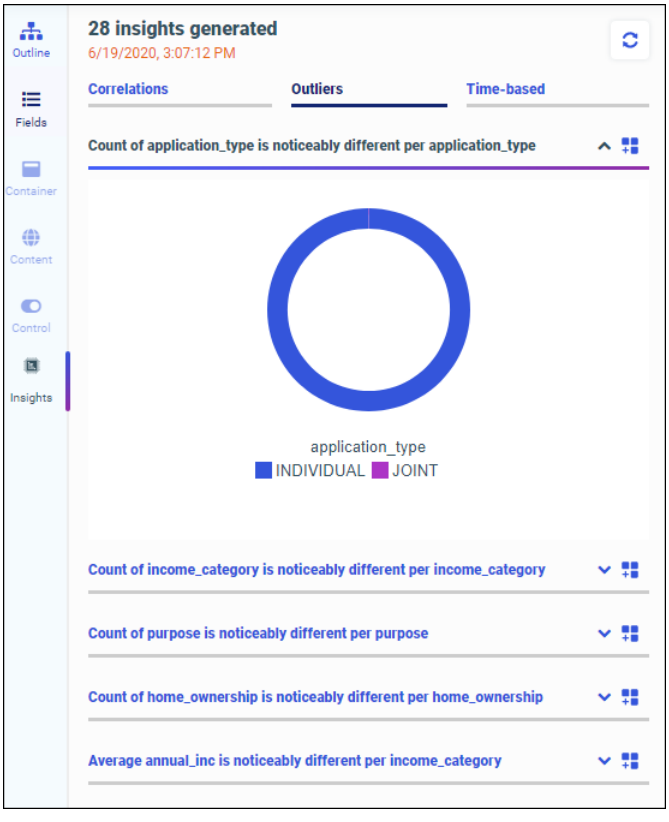
- **Correlations**. Detects cases where multiple measures show a similar trend or pattern.
- **Outliers**. Identifies unusual patterns in data.
- **Time-based**. Analyzes business data over time to identify consistent and inconsistent patterns in noisy data.

In the following example, a scatter plot is categorized as a Correlation.

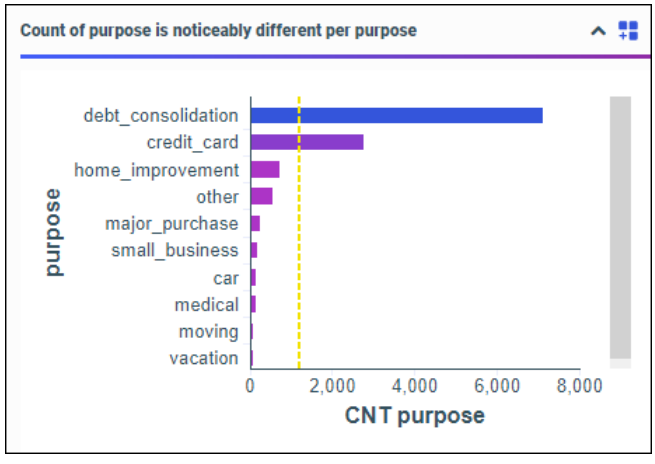


Scatter plots are generated for each pair of measures that have a high correlation score. A red trend line emphasizes the overall pattern of the data, so you can compare the distance of data points against the trend line, and identify cases where they follow or do not follow the overall pattern.

Outliers can be generated as pie charts or bar charts. In the following example, a pie chart is categorized as an Outlier.



In the following example, a bar chart is categorized as an Outlier.

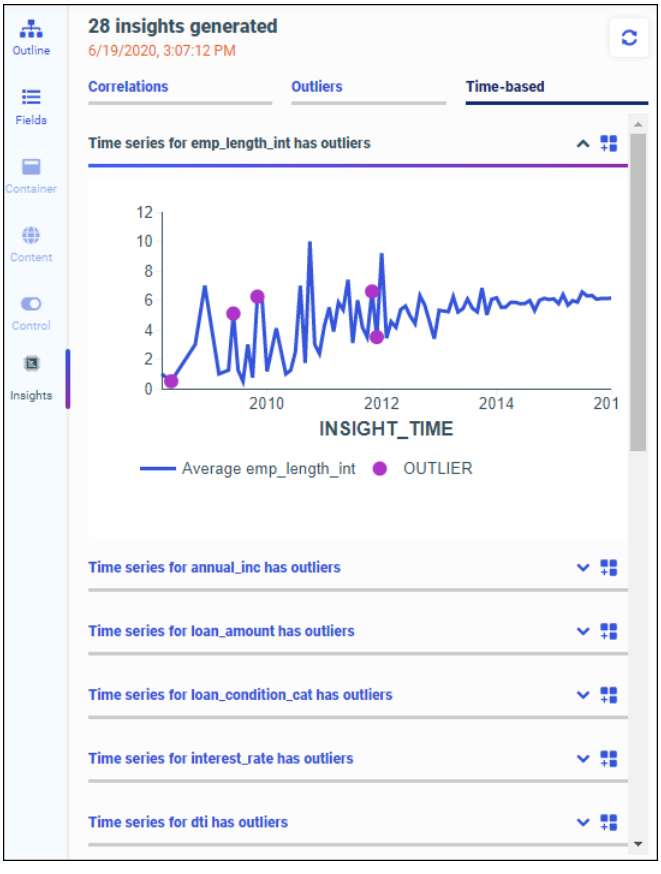


There are two types of detected outliers, which are based on the following functions:

- **Count function.** When the count value of one or two categories is much larger than other classes for dimensions.
- **Average function.** When the average value of a measure against categories in dimensions is significantly higher than in other categories.

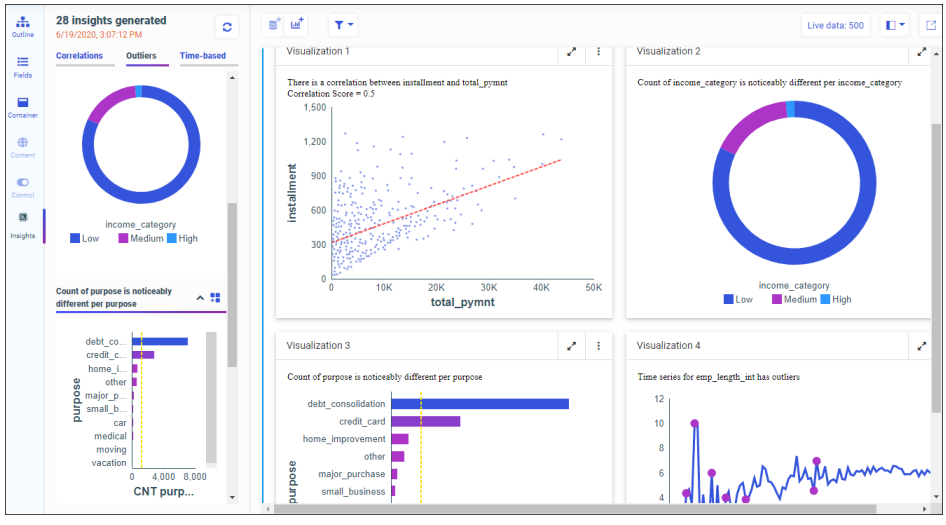
If the count distinct of a dimension is five or less, a pie chart is generated. If the count distinct of a dimension is more than five, a bar chart is generated. Each bar chart comes with a yellow average line, so you can compare the dominant category with the average value.

In the following example, a line chart is categorized as Time-based.



Time-based charts are formatted as line charts and are generated based on the average function for measures. The purple points highlight cases where there is an outlier in time dimensions.

You can add a chart to a page or dashboard by clicking the *Copy* icon  in the chart toolbar. Multiple charts added to a page are shown in the following image.

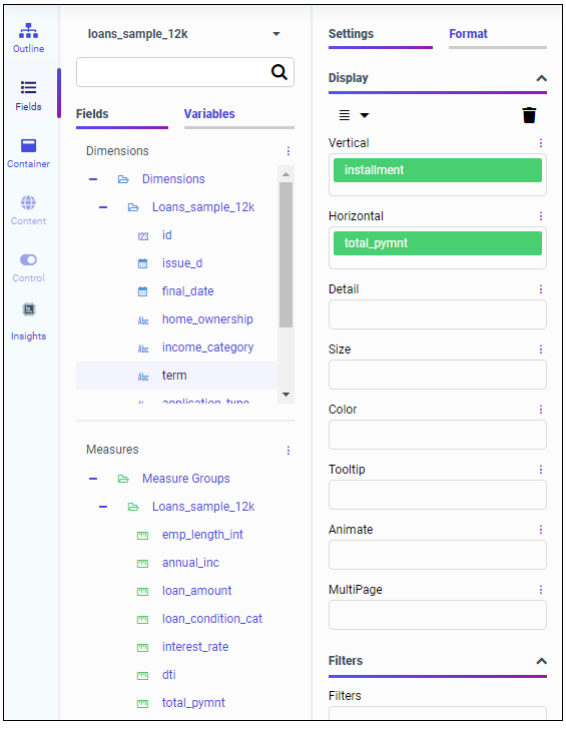


Procedure: How to Edit Analytic Insights

You can edit the charts generated by Automated Insights to customize the content you want.

1. Select your chart on the page or dashboard.
2. On the sidebar, click *Fields*.

The Fields tab opens, as shown in the following image.



3. Drag fields into the Display panel buckets to modify your chart.
4. Right-click a field to select additional options.

   Note: For more information about creating and customizing charts in Db2 Web Query, see the *Creating Charts Using Db2 Web Query Designer* technical content.

Procedure: How to Save Analytic Insights

To save your page or dashboard:

1. Click *Save* from the Designer toolbar.

   The Save dialog box opens.

2. Change your file location or file name as needed in the dialog box.
3. Click *OK*.

   Note: To save as a standalone chart, select the *Outline* tab on the sidebar, right-click on the associated entry in the outline, and click the *Save as standalone* option.