

Things You Probably Didn't Know You Could Do with Db2 Web Query *for i*

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IBM i Anywhere
IBM i Everywhere



Who Uses Db2 Web Query?

Executives - Dashboards to monitor Key Performance Indicators

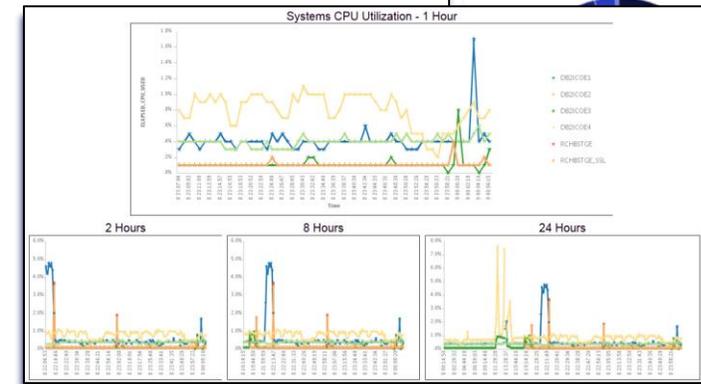
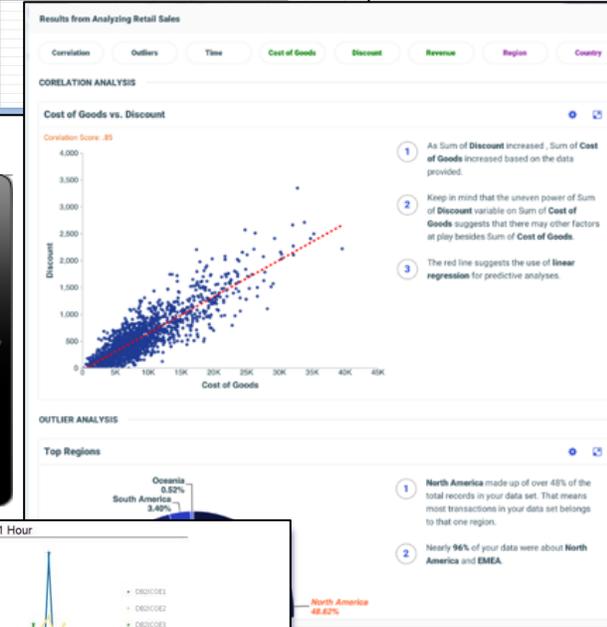
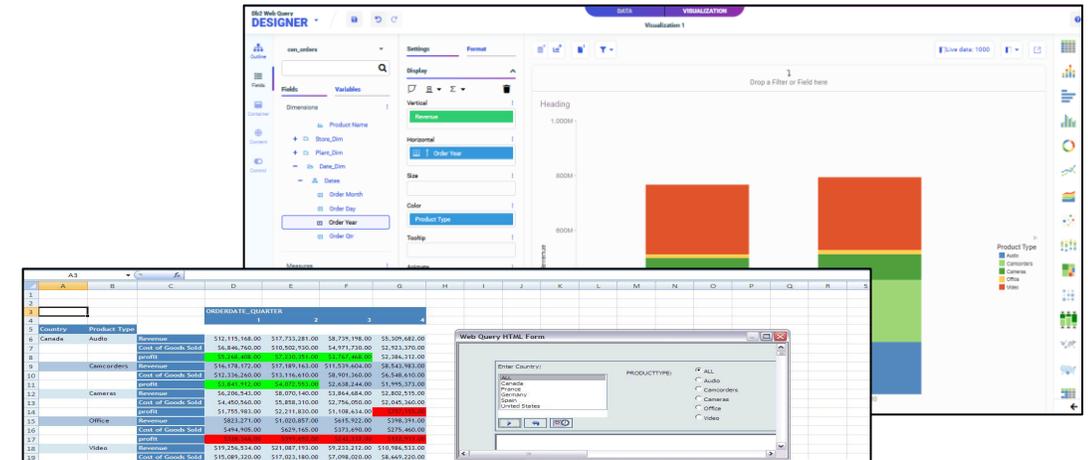
Finance Dept – they love their spreadsheets!

Business Analysts and Data Scientists – Cobble together data and analyze on premise or in the cloud

Users on the Go - Mobile Device Support

Applications - URL API to Embed Reports in Apps

And YES, **IBM i Admins and Developers** – Monitor System and Security Metrics



FAST START: INSTALL with EZ-Install.....PLEASE

IBM i Anywhere
IBM i Everywhere

- EZ-Install is **HIGHLY RECOMMENDED** for installing webquery or upgrading from previous versions
 - Request it by sending an email to QU2@us.ibm.com, including name, company name, and s/n
 - It provides **VALUE ADD** way beyond just restoring the license program products
 - Sample Reports, Tutorials, Utilities to help you get a **FAST START**
 - Query/400 Discovery Tool
 - Create Date Dimension Table (really cool)
 - **Sample Reports for the Systems Administrator**
 - Business oriented sample reports backed by tutorials
 - Tutorials and additional “how to” documentation provide guides to show you how the sample reports were built



HELP us help you –
make sure your IBM
Business Partner is
using EZ-Install to
install or upgrade!

Request EZ-Install by emailing QU2@us.ibm.com. Include name, company name, serial number and OS level (ex. 7.3)

What Do You Get with EZ-Install?

IBM i Administration Samples folder

- Use as is
- Modify as you like
- Learn how you can build your own

There are other things of interest in EZ-Install

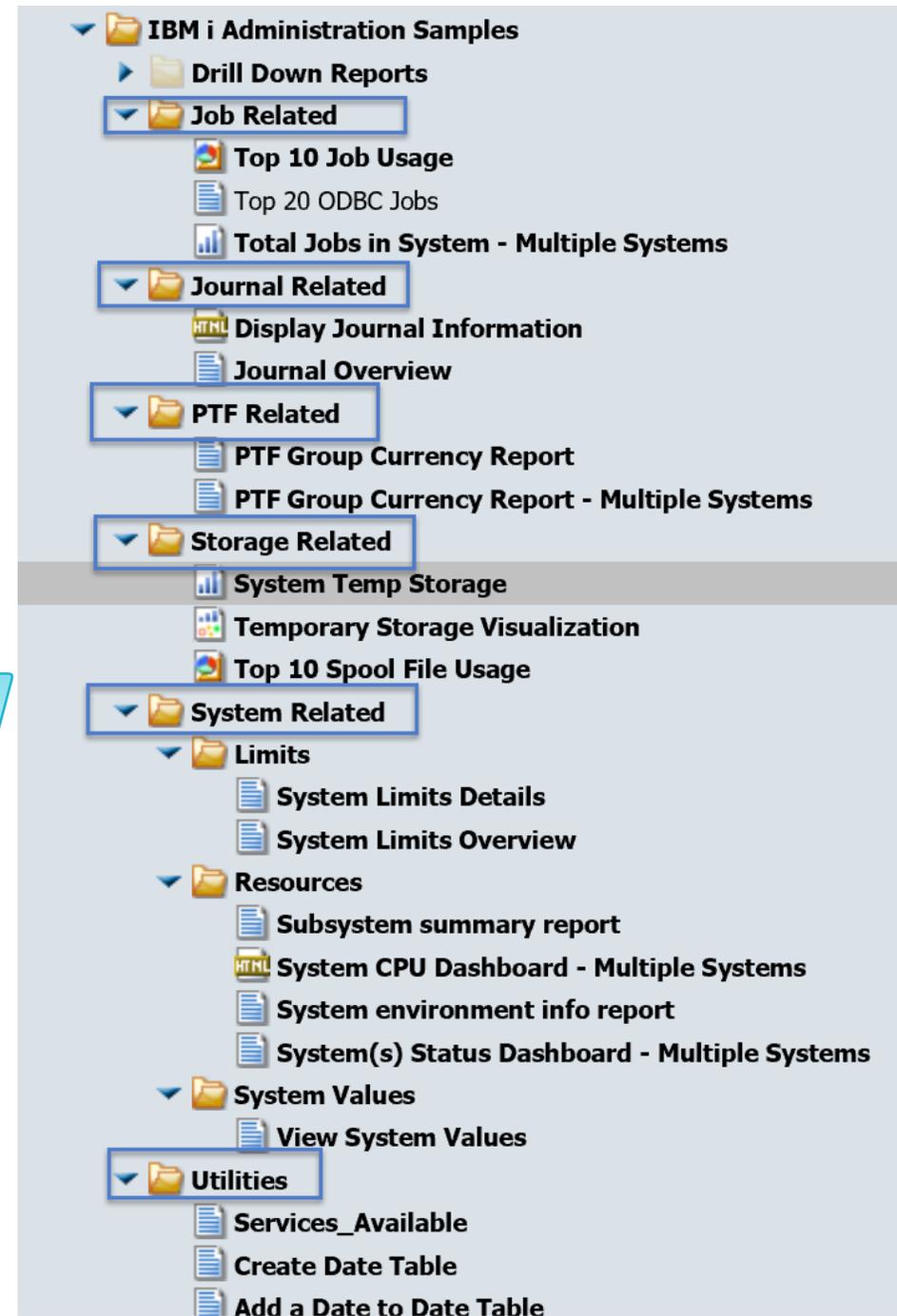
- Query/400 Discovery Tool
- Create Date Dimension Table
- **EZ-Report**



NEW

And other things that come with the product

- Audit/Monitoring reports
 - Who is running the longest reports
 - Which reports are taking the longest
 - When was a report last modified
 - Who owns which “schedules”



Video Demonstrations

Video demonstrations

Db2 Web Query Version 2.3.0 Demos

Designer	 Building Reports	 Formatting Charts
	 Building Charts and Visualizations	 Assembling Pages from Existing Content
Insights	 Generating Automated Insights	
EZ-Report	 Create Fast Report over SQL Statement with EZ-Report	

InfoAssist Demos

Reports	 Margin by product category (00:04:04)	 Sales metrics year to date (00:03:41)
	 Quantity sold by stores (00:04:03)	 Yearly product metrics (00:05:29)
Charts	 Bar – highest margin products (00:04:30)	 Scatter – profit vs. COGs for products (animation) (00:05:06)
	 Choropleth map – sales by state (00:03:11)	 Scatter matrix – profit vs. COGs (00:05:17)
	 Heatmap – average margin product by country (00:03:51)	 Stacked bar – sales by month and product category (00:03:19)

<http://ibm.biz/db2webqueryi> or <http://ibm.biz/db2wq-230-videos>

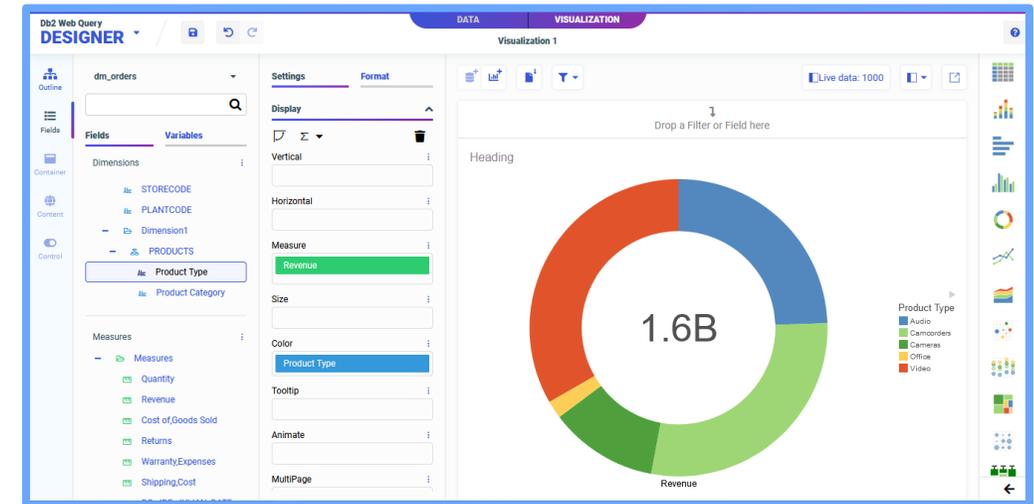
New Db2 Web Query Editions

Db2 Web Query **Scheduler Edition 5733-WQB**

- **Express + Job Scheduling**
- Unlimited report “consumers”
 - Distributed via email, FTP, or placed on network drive
 - Users can work with data offline
 - Support Mobile or At Home Workers

Db2 Web Query **RunTime User Edition 5733-WQR**

- **Express + RunTime Licensing**
- Users can run interactive reports with live data



OVER 50% Savings for 20 user system

OVER 75% Savings for 50 user system

ibm.biz/db2wq-blog-neweditions

Savings compares adding user licenses to Express vs. Upgrading to new Edition
Calculated using U.S. List Prices and includes SW Maintenance
Assumes you already own Express Edition + 2 user licenses

I am Required to Show This Slide

- Yes, Db2 Web Query Does Excel

<i>Sales Report</i>					
Product	Product Category	Revenue	Cost of Goods Sold	Profit	Margin
Audio	Amplifiers/PreAmps/Tuners	\$42,374,428.00	\$25,739,570.00	\$16,634,858.00	39.26%
	Audio Systems	\$122,340,000.00	\$81,277,140.00	\$40,062,860.00	32.75%
	CD Players and Recorders	\$53,840,000.00	\$37,751,000.00	\$16,008,999.00	29.73%
	MP3	\$43,400,000.00	\$25,847,772.00	\$17,052,928.00	39.21%
	Receivers	\$35,907,113.00	\$22,998,000.00	\$12,909,113.00	35.95%
	Speakers	\$84,717,053.00	\$24,680,990.00	\$60,036,063.00	70.87%
Subtotal for Audio		\$382,683,321.00	\$219,978,500.00	\$162,704,821.00	42.52%
Camcorders	Digital8 Camcorders	\$13,614,953.00	\$6,512,600.00	\$7,102,353.00	52.17%
	DVD Camcorders	\$300,000.00	\$300,373,350.00	\$79,003,287.00	26.32%
	MiniDV Camcorders	\$34,128,360.00	\$17,411,091.00	\$17,411,091.00	33.78%
Subtotal for Camcorders		\$341,041,313.00	\$341,014,310.00	\$103,516,731.00	23.29%
Cameras	Digital Cameras	\$184,103,667.00	\$133,328,830.00	\$50,774,837.00	27.58%
Subtotal for Cameras		\$184,103,667.00	\$133,328,830.00	\$50,774,837.00	27.58%
Office	Handheld and PDA	\$18,533,190.00	\$14,067,420.00	\$4,465,770.00	24.10%
	Organizers	\$11,712,495.00	\$4,957,305.00	\$6,755,190.00	57.68%
Subtotal for Office		\$30,245,685.00	\$19,024,725.00	\$11,220,960.00	37.10%
Video	DVD	\$329,872,045.00	\$248,768,900.00	\$81,103,145.00	24.59%
	TV	\$168,799,539.00	\$150,771,700.00	\$18,027,839.00	10.68%
	VCR	\$21,688,621.00	\$16,270,950.00	\$5,417,671.00	24.98%
Subtotal for Video		\$520,360,205.00	\$415,811,550.00	\$104,548,655.00	20.09%
TOTAL		\$1,561,923,919.00	\$1,129,157,915.00	\$432,766,004.00	27.71%
<i>Values generated on Mon, Jun 07, 2021</i>					

Preserve color schemes and traffic lighting

Calculated fields come down as formulas

I am Required to Show This Slide

- Yes, Db2 Web Query Does Excel

The screenshot shows an Excel spreadsheet with a data table and a PivotTable Fields task pane. The data table has columns for Product Name, Product Category, Data, and Total. The PivotTable Fields task pane is on the right, showing a list of fields to add to the report: Cost of Goods Sold, Product Category, Product Name, Profit, Quantity, Returns, and Revenue. A callout box with a green border and a green arrow points to the data table with the text "Push into pivot table format".

Product Name	Product Category	Data	Total
Audio/Video Receiver	Receivers	Sum of Revenue	\$4,302,778.00
		Sum of Cost of Goods Sold	2162200.00
		Sum of Profit	
		Sum of Quantity	
		Sum of Returns	
AM / FM Stereo Tuner	Amplifiers/PreAmps/Tuners	Sum of Revenue	\$730,822.00
		Sum of Cost of Goods Sold	477800.00
		Sum of Profit	\$473,022.00
		Sum of Quantity	4778
		Sum of Returns	461
CD Changer / CD Player	CD Players and Recorders	Sum of Revenue	\$4,689,037.00
		Sum of Cost of Goods Sold	2827560.00
		Sum of Profit	\$1,861,477.00
		Sum of Quantity	23563
		Sum of Returns	2457
CD Recorder with 50GB Hard Disc Drive	CD Players and Recorders	Sum of Revenue	\$5,788,755.00
		Sum of Cost of Goods Sold	4347000.00
		Sum of Profit	\$1,441,755.00
		Sum of Quantity	7245
		Sum of Returns	715
D-VHS Digital Video Recorder	VCR	Sum of Revenue	\$1,120,290.00
		Sum of Cost of Goods Sold	963000.00

PivotTable Fields

Choose fields to add to report:

Search

- Cost of Goods Sold
- Product Category
- Product Name
- Profit
- Quantity
- Returns
- Revenue

Drag fields between areas below:

Filters

Columns

Rows

Product Name

Product Category

Values

Sum of Revenue

Sum of Cost of Go...

Defer Layout Update

Update

I am Required to Show This Slide

- Yes, Db2 Web Query Does Excel

	A	B	C	D	E	F	G
1	Country	Region	Product Type	Product Category	Revenue	Cost of Goods Sold	Quantity
2	Canada	Eastern Canada	Audio	Amplifiers/PreAmps/Tuners	\$3,641,071.00	\$2,218,820.00	9,429
3				Audio Systems	\$13,874,740.00	\$9,273,870.00	8,960
4				CD Players and Recorders	\$4,862,691.00	\$3,444,240.00	7,709
5				MP3	\$4,078,820.00	\$2,448,510.00	20,800
6				Receivers	\$3,325,818.00	\$2,145,300.00	7,472
7				Speakers	\$7,833,814.00	\$2,315,320.00	27,336
8			Camcorders	Digital8 Camcorders	\$1,324,991.00	\$625,940.00	5,419
9				DVD Camcorders	\$38,773,168.00	\$30,594,150.00	26,222
10				MiniDV Camcorders	\$5,137,588.00	\$3,390,510.00	5,302
11			Cameras	Digital Cameras	\$18,378,011.00	\$13,264,700.00	36,519
12			Office	Handheld and PDA	\$1,491,653.00	\$1,136,220.00	4,947
13				Organizers	\$942,073.00	\$395,360.00	16,817
14			Video	DVD		\$923,450.00	31,108
15				TV		\$247,900.00	4,654
16				VCR		\$467,150.00	6,001
17		Western Canada	Audio	Amplifiers/PreAmps		\$871,520.00	3,626
18				Audio Systems		\$327,440.00	796
19				CD Players and Rec		\$525,240.00	1,137
20				MP3	\$703,068.00	\$373,900.00	4,002
21				Receivers	\$536,107.00	\$335,350.00	1,533
22				Speakers	\$1,630,259.00	\$465,280.00	5,151

Organize Data Into Tabs

I am Required to Show This Slide

- Yes, Db2 Web Query Does Excel

358 of 358 records, Page 1 of 7

Gross Profit by Geo and Product

Country	Region	Product Type	Product Category	Revenue	Cost of Goods Sold	Profit
Canada	Eastern Canada	Audio	Amplifiers/PreAmps/Tuners	\$3,641,071.00		\$1,422,251.00
			Audio Systems	\$13,874,740.00		\$4,600,870.00
			CD Players and Recorders	\$4,862,691.00		\$1,418,451.00
			MP3	\$4,078,820.00		\$1,630,310.00
				\$3,325,818.00		\$1,180,518.00
				\$7,833,814.00		\$5,518,494.00
				\$1,324,991.00		\$699,051.00
				\$38,773,168.00		\$8,179,018.00
			MiniDV Camcorders	\$5,137,588.00		\$1,747,078.00
		Cameras	Digital Cameras	\$18,378,011.00		\$5,113,311.00
		Office	Handheld and PDA	\$1,491,653.00		\$355,433.00
			Organizers	\$942,073.00		\$546,713.00
		Video	DVD	\$34,232,392.00		\$8,308,942.00
			TV	\$13,800,546.00		\$1,552,646.00
			VCR	\$1,998,609.00		\$531,459.00
Subtotal: Eastern Canada						42,804,545.00
	Western Canada	Audio	Amplifiers/PreAmps/Tu	\$737,463.00	\$525,240.00	\$212,223.00
			MP3	\$703,068.00	\$373,900.00	\$329,168.00
			Receivers	\$536,107.00	\$335,350.00	\$200,757.00
			Speakers	\$1,630,259.00	\$465,280.00	\$1,164,979.00
		Camcorders	Digital8 Camcorders	\$130,298.00	\$61,670.00	\$68,628.00

Play with data views and then dump into Excel with HTML Analytical Reports

Export options: HTML, CSV (comma delim), XML (Excel)

XML (Excel) options: All records, Filtered only

I am Required to Show This Slide

- Yes, Db2 Web Query Does Excel

The image shows an Excel spreadsheet with data from a Db2 Web Query. The spreadsheet has columns for Country, Product Type, Revenue, Cost of Goods Sold, and profit. The data is grouped by Country (Canada, France) and Product Type (Audio, Camcorders, Cameras, Office, Video). A 'Web Query HTML Form' dialog box is overlaid on the spreadsheet, showing a form with 'Enter Country:' and 'PRODUCTTYPE:' fields. The 'Enter Country:' field has a list of countries: ALL, Canada, France, Germany, Spain, and United States. The 'PRODUCTTYPE:' field has radio buttons for ALL, Audio, Camcorders, Cameras, Office, and Video. A 'Customized Prompts' callout points to the dialog box, and an 'Embedded Query' callout points to the spreadsheet data.

Country	Product Type	Revenue	Cost of Goods Sold	profit
Canada	Audio	\$12,115,168.00	\$6,846,760.00	\$5,268,408.00
		\$17,733,281.00	\$10,502,930.00	\$7,230,351.00
		\$3,767,468.00		\$2,386,312.00
	Camcorders	\$16,178,172.00	\$12,336,260.00	\$3,841,912.00
		\$17,189,163.00	\$13,116,610.00	\$4,072,553.00
		\$11,539,604.00	\$8,901,360.00	\$2,638,244.00
		\$8,543,983.00	\$6,548,610.00	\$1,995,373.00
	Cameras	\$6,206,543.00	\$4,450,560.00	\$1,755,983.00
		\$8,070,140.00	\$5,858,310.00	\$2,211,830.00
		\$3,864,684.00	\$2,756,050.00	\$1,108,634.00
		\$2,802,515.00	\$2,045,360.00	\$757,155.00
	Office	\$823,271.00	\$494,905.00	\$328,366.00
		\$1,020,857.00	\$629,165.00	\$391,692.00
		\$615,922.00	\$373,690.00	\$242,232.00
		\$398,391.00	\$275,460.00	\$122,931.00
	Video	\$19,256,534.00	\$15,089,320.00	\$4,167,214.00
		\$21,087,193.00	\$17,023,180.00	\$4,064,013.00
		\$9,233,212.00	\$7,098,020.00	\$2,135,192.00
		\$10,986,533.00	\$8,669,220.00	\$2,317,313.00
France	Audio	\$5,192,880.00	\$3,124,390.00	\$2,068,490.00
		\$4,639,677.00	\$2,614,770.00	\$2,024,929.00
		\$3,183,611.00	\$2,021,340.00	\$1,162,271.00
		\$1,601,642.00	\$1,110,940.00	\$490,702.00
	Camcorders	\$6,695,110.00	\$5,082,620.00	\$1,612,490.00
		\$5,754,637.00	\$4,441,850.00	\$1,312,787.00
		\$5,267,554.00	\$4,091,390.00	\$1,176,164.00
	Cameras	\$2,751,052.00	\$1,954,860.00	\$796,192.00
		\$2,437,776.00	\$1,781,130.00	\$656,646.00
		\$1,267,604.00	\$929,810.00	\$337,794.00
		\$1,183,100.00	\$1,183,100.00	\$498,981.00
	Office	\$221,463.00	\$124,530.00	\$96,933.00
		\$773,151.00	\$536,395.00	\$236,756.00
		\$206,266.00	\$129,300.00	\$76,966.00
		\$137,168.00	\$88,945.00	\$48,223.00

I'm not required to show this but I thought I would anyway

- Run Spool Files report to generate list of spooled files based on selection criteria

Spool Files IBM Administration Samples > Spool File Related

14 of 14 records, Page 1 of 1

Spool File Listing
Output Queue Lib: 'QGPL' OR 'QUSRSYS'
Output Queue: 'QPRINT'
User:
Starting Date: May 01 2021

Output Queue Library	Output Queue Name	File Create Timestamp	File Entry Number	PDF Link	Excel Link	User	Job	Spool File Name	Size (KB)
QGPL	QPRINT	2021/05/18 21:03:27.184255	1	PDF	Excel	MACKD	331718/MACKD/MACKD	QPQUPRFL	3,140
		2021/05/18 17:20:04.029103	1	PDF	Excel	HBEDOYA	331710/HBEDOYA/EMPPF	EMPPF	38
		2021/05/18 17:05:27.262410	28	PDF	Excel	HBEDOYA	299824/HBEDOYA/QPRTJOB	EMPPF	38
		2021/05/18 16:49:59.875788	1	PDF	Excel	HBEDOYA		EMPPF	40
		2021/05/18 16:45:04.044066	1	PDF	Excel	HBEDOYA		EMPPF	38
		2021/05/18 16:00:06.350991	27	PDF	Excel	HBEDOYA		EMPPF	38
		2021/05/13 08:04:52.099257	26	PDF	Excel	HBEDOYA		EMPPF	40
		2021/05/12 14:03:53.643267	25	PDF	Excel	HBEDOYA	299824/HBEDOYA/QPRTJOB	EMPPF	40
		2021/05/12 11:45:59.361547	1	PDF	Excel	MACKD	331309/MACKD/QPADEV0003	QPQUPRFL	3,144
		2021/05/06 09:12:25.487368	24	PDF	Excel	HBEDOYA	299824/HBEDOYA/QPRTJOB	EMPPF	38
		2021/05/05 20:24:42.298251	1	PDF	Excel	QSYS	329982/QSYS/QSLPSVR	QPRINT	28
		2021/05/05 12:08:48.623259	23	PDF	Excel	HBEDOYA	299824/HBEDOYA/QPRTJOB	EMPPF	38
		2021/05/04 16:21:34.290034	22	PDF	Excel	HBEDOYA	299824/HBEDOYA/QPRTJOB	EMPPF	38
		2021/05/04 15:45:50.188847	21	PDF	Excel	HBEDOYA	299824/HBEDOYA/QPRTJOB	EMPPF	38

Report run on Tue, May 18, 2021 at 21.03.51

Click on Excel link

	A	B	C	D	E	F	G	H
1	5/18/2021	21:03:27					PAGE	1
2	Order	Order	Requested	Actual	Receive	Price	Cost	
3	Number	Date	Ship Date	Ship Date	Date			
4	54390	12/29/2021	2/8/2022	4/23/2022	4/28/2022	199	100	
5	54390	12/29/2021	3/29/2022	3/28/2022	4/13/2022	129	40	
6	54390	12/29/2021	2/1/2022	2/17/2022	2/27/2022	199	150	
7	54390	12/29/2021	2/13/2022	2/23/2022	3/24/2022	399	300	
8	54390	12/29/2021	4/4/2022	4/1/2022	4/27/2022	899	750	
9	54510	12/29/2021	2/19/2022	5/3/2022	5/30/2022	199	100	
10	54510	12/29/2021	1/30/2022	4/14/2022	5/2/2022	129	60	
11	54510	12/29/2021	3/22/2022	3/19/2022	4/6/2022	189	100	
12	54510	12/29/2021	2/14/2022	2/5/2022	2/25/2022	279	150	
13	54510	12/29/2021	2/12/2022	3/2/2022	3/8/2022	329	250	
14	54510	12/29/2021	2/15/2022	2/23/2022	3/19/2022	459	350	



Agenda

- What's New in 2.3.0
- To SQL or not to SQL using IBM i Services Examples

Db2 Web Query Version 2.3.0



The screenshot displays the Db2 Web Query interface. At the top, there's a 'WebFOCUS' header with navigation options. Below it, a dashboard shows various charts and reports under 'RECENTS' and 'FAVORITES'. A 'NEW DESIGNER' window is open, showing a visualization editor with a 'Fields' pane on the left, a 'Measures' pane, and a 'Visualization 1' area on the right. The visualization is a stacked bar chart showing 'Revenue' for '2018' and '2019' across different 'Product Type' categories (Auto, Computers, Office, Other). Below the designer, there are two analysis windows. The first is 'CORRELATION ANALYSIS' titled 'Cost of Goods vs. Discount', showing a scatter plot with a red regression line and a correlation score of .85. The second is 'OUTLIER ANALYSIS' titled 'Top Regions', showing a donut chart with segments for Oceania (9.82%), South America (3.46%), and North America (48.62%).

- **Significant** upgrades in ease of use and navigation
- **New Home Page** simplifies organization of content
 - Complements legacy BI Portal
- Powerful **New Designer** for creating content
 - Complements legacy InfoAssist authoring tool
- Data Preparation facilities to **“work with data”** for building of extracts or “wrangling” data to use for visualizations
- **New “Insights”** brings packaged AI/ML models to Web Query to auto generate additional data relationship charts and information

Auto Generate Insights – New in Version 2.3.0

Increase productivity and gain insights through automatic generation of analytics

- Automatically analyze data sets via pre-built ML (machine learning) models to find correlations and outliers
- User can cobble the data set together through synonyms, or new Data Flows
- **Initially shipped as a limited use cloud-based approach for Phase 1**

Chart Category	Description	Statistical Model Used
Correlations	Detects cases where multiple measures show a similar trend or pattern.	Pearson Correlation
Outliers	Identifies unusual patterns in categorical data.	Entropy Analysis
Time-based	Analyzes business data over time to identify consistent and inconsistent patterns in noisy data.	Time-based outlier: Isolation Forest
		Time-based seasonality: STL Decomposition
		Time-based trend: Piecewise Linear Regression



Note: Insights ships with a default of being disabled

Example: Loan Data

The screenshot shows the Db2 Web Query interface. At the top, there are three buttons: a plus sign, 'Get Data', and 'Visualize Data'. A green arrow points to the 'Visualize Data' button. Below the buttons, there is a 'Workspaces' section with a dropdown menu showing 'Demo' selected. On the left, a sidebar lists various workspaces, with 'Demo' highlighted in a light blue box. In the center, there are three tabs: 'INFOASIST', 'SCHEDULE', and 'OTHER'. Below these tabs are three icons: 'Chart', 'Visualization', and 'Report'. At the bottom, there is a 'Folders' section with a list of folders, including 'Demo' which is highlighted.

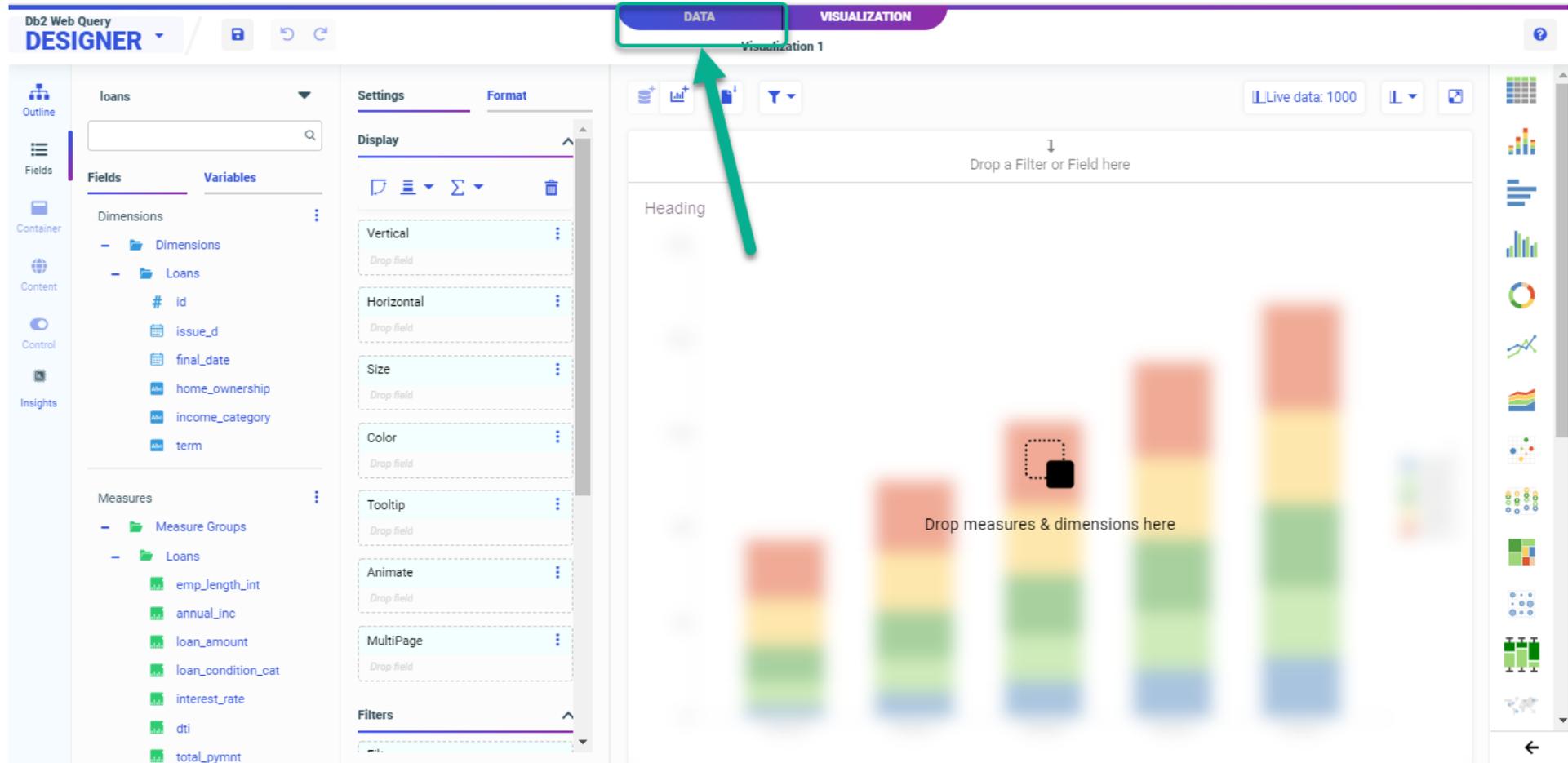
- Navigate to your workspace
- Click on Visualize Data
- Select the LOANS Synonym

The screenshot shows a dialog box for selecting data sources. At the top, there is a search bar with the text 'Filter data sources' and a magnifying glass icon. Below the search bar, there is a table with two columns: 'Folder' and 'Name'. The 'loans' synonym is highlighted in a light blue box. A green arrow points to the 'Select' button at the bottom right of the dialog.

Folder	Name
demo	demo
demo	demo
demo	loans_data_dim_view
demo	loans
demo	logi_revpgftqry_qry400
demo	managua_revpgftqry_qry400
demo	mincron_inventory
demo	mincron_orders_cls
demo	mincron_orders
demo	mincron_plant

Loan Data

- New Db2 Web Query “Designer” Opens
- Let’s cobble some data together first. Click on DATA Tab



Loan Data

- Suppose you had a Packed 8 Decimal field for date
 - Let's fix that – web query ships with a utility to create a date dimension table (and view)
- Joining the LOAN synonym to the date dimension view will add all kinds of date attributes including a true date set of fields that Python Libraries will understand (they won't know a P8 decimal is a date)!

Db2 Web Query DESIGNER

Data

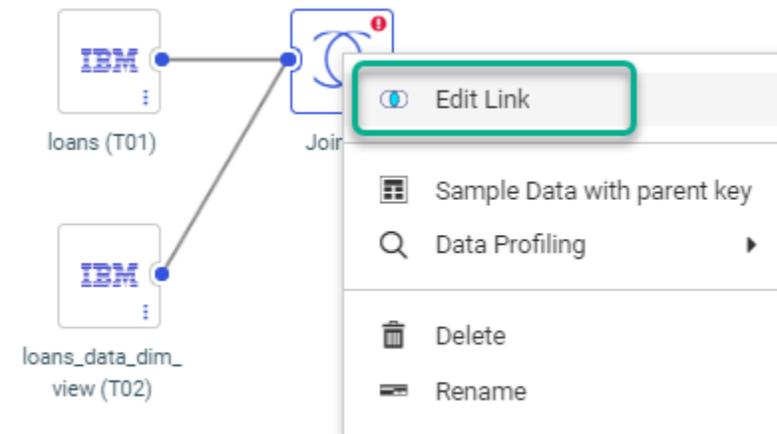
Search

- lag_lead_sql
- laglead_view
- loans
- loans_data_dim_view**
- logi_revgpftqry_qry400
- managua_revgpftqry_qry400
- mincron_inventory
- mincron_orders
- mincron_orders_cls
- mincron_plant
- mincron_stores
- mon_revgpftqry_qry400
- nelnet_date_conv
- nelnet_inventory
- nelnet_orders

loans

loans_data_dim_view

id	issue_d	final_date	emp_length_int	home_ownership
7,495,262	10/01/2013	12/01/2015	6.05	RENT
65,837,249	11/01/2015	12/01/2015	10.00	RENT
51,756,628	06/01/2015	01/01/2016	3.00	RENT



Loan Data

- Satisfied with JOIN definition? Click on Visualization tab

Db2 Web Query
DESIGNER

DATA VISUALIZATION

Visualization 1

Edit Join from LOANS to LOANS_DATA_DIM_VIEW

Configure 'Join 1' Multiple

Join Type

Inner Left Outer Right Outer Full Outer

Join Clauses

loans (T01)		loans_data_dim_view (T02)	
issue_d	=	Date	

+ + Expression Suggestions Clear All

Sample Data Join Profiler

Series

Series	Left	Right	Result
Excluded	0	25,834	
Included	12,000	99	
Result			12,000

Click on the bars or numbers to see the matches

Load Data Supplemented Now with Date Attributes

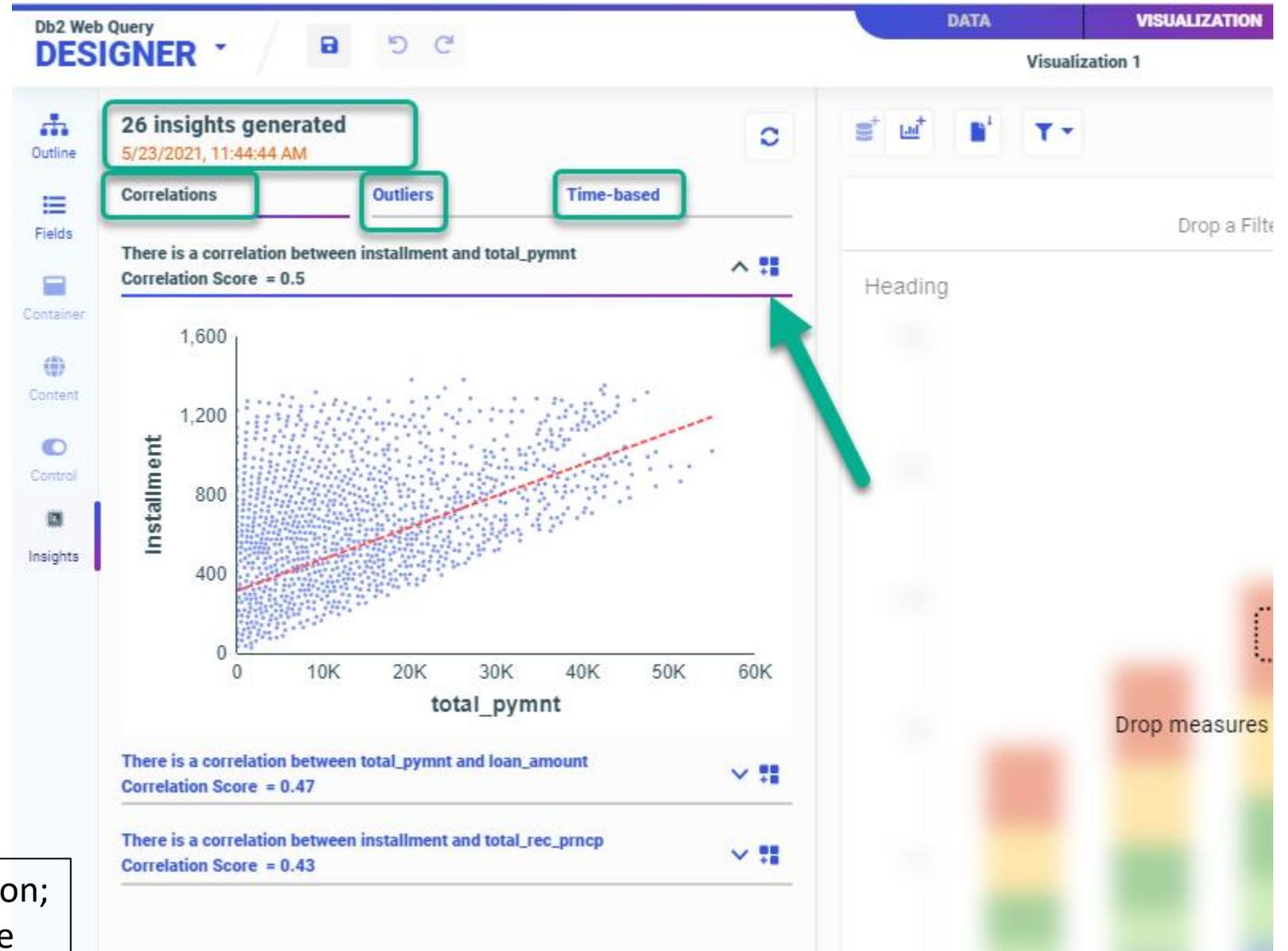
- Within Designer you could start building a dashboard with your data set, then turn it into a “page”
 - A page can contain many different charts/graphs/report in single windowpane
 - For NOW, let’s get some insights from some pre-built ML Models; [Click on INSIGHTS](#)

The screenshot displays the IBM i Designer interface for a 'Db2 Web Query' project. The top navigation bar includes 'DESIGNER' and tabs for 'DATA' and 'VISUALIZATION'. The main workspace is titled 'Visualization 1' and contains a blurred bar chart with the text 'Drop measures & dimensions here'. A red arrow points to the 'Insights' icon in the left sidebar. The left sidebar also shows a 'loans' data source with various date attributes listed under 'Dimensions' and 'Measures'. The right sidebar provides a library of visualization templates categorized into 'Common', 'Report', 'Business', and 'Custom'.

Loan Data Supplemented Now with Date Attributes

- Data Sent to Cloud* Service
- 26 “insights” in the form of charts and text description returned from ML Models in 3 categories
 - Correlations
 - Outliers
 - Time-Based
- You can peruse each insight and decide to add to your “Page” (dashboard) using buttons in upper right-hand side.

* We are working on an On-Premise option; 500,000 row limit in current cloud service



Loan Data Supplemented with Date Attributes

26 insights generated

5/23/2021, 11:44:44 AM

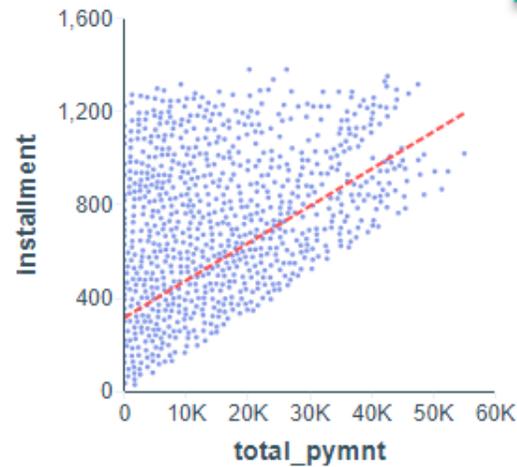
Correlations

Outliers

Time-based

There is a correlation between installment and total_pymnt

Correlation Score = 0.5



There is a correlation between total_pymnt and loan_amount

Correlation Score = 0.47

There is a correlation between installment and total_rec_prncp

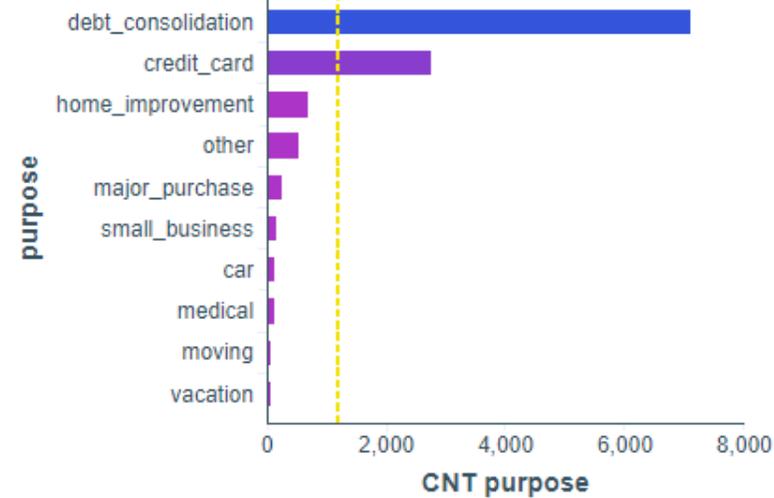
Correlation Score = 0.43

Page Heading

Drop a Filter or Field here

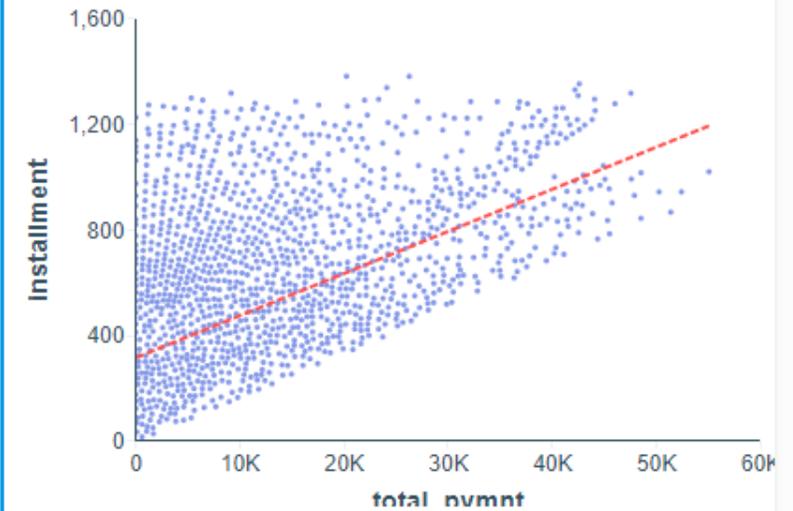
Container 1

Count of purpose is noticeably different per purpose



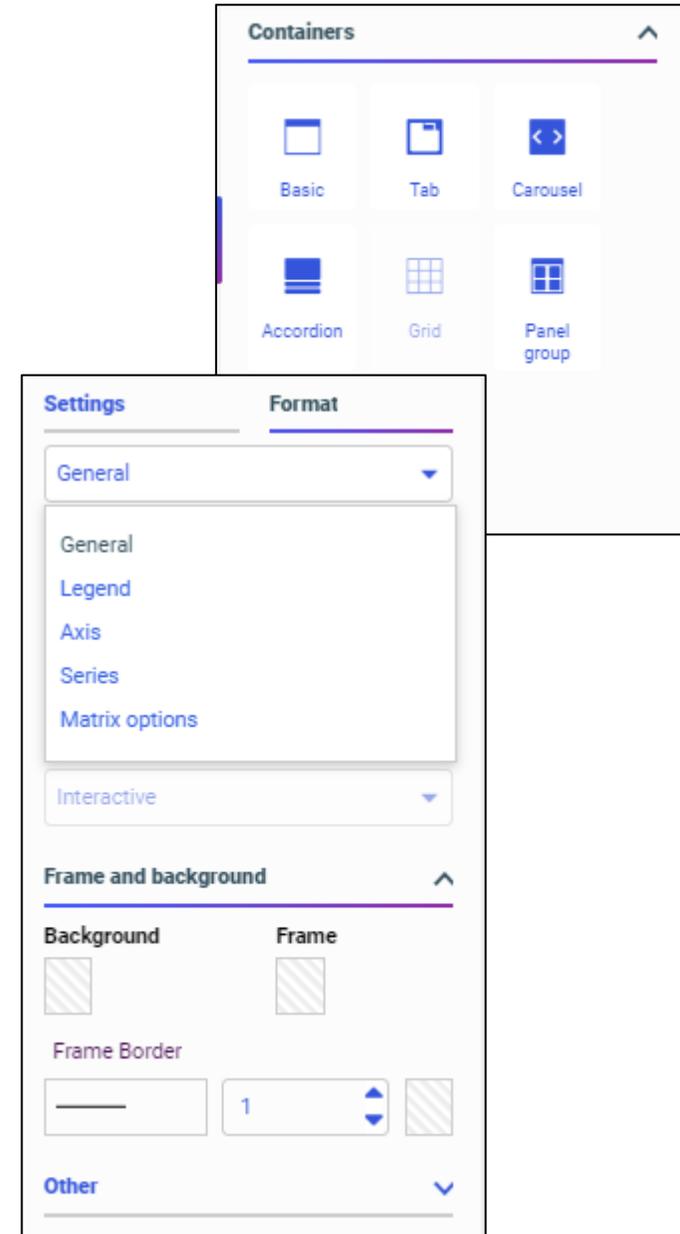
Container 2

There is a correlation between installment and total_pymnt



Now What?

- You can add your own containers to the page with the data set you're working with
 - Multiple options for containers to contain more than one visualization/report
 - Tab, Carousel, Accordion, etc.
- Customize the page (formatting options)
- Add a dynamic Filter
- Save the page, allow others to run it
 - Post auto generation, you are feeding more/new data **into the charts** but not going back to the cloud ML Models (i.e., you trained the model, no need to do so except you may want to down the road at some point)
- You can create a DATA FLOW as a permanent object (similar to creating a permanent Synonym)



Loan and Date Time Analysis

issue_d Y-Q

All

Reason for Loan

Count of purpose

debt_conso

cred

home_impro

purpose

major_pur

small_bu

issue_d Y-Q

All

Clear

Custom >

Previous month and current

Previous quarter and current

Previous year and current

YTD

Last 5 quarters

Last 13 months

Last 9 quarters

Last 25 months

Prior YTD

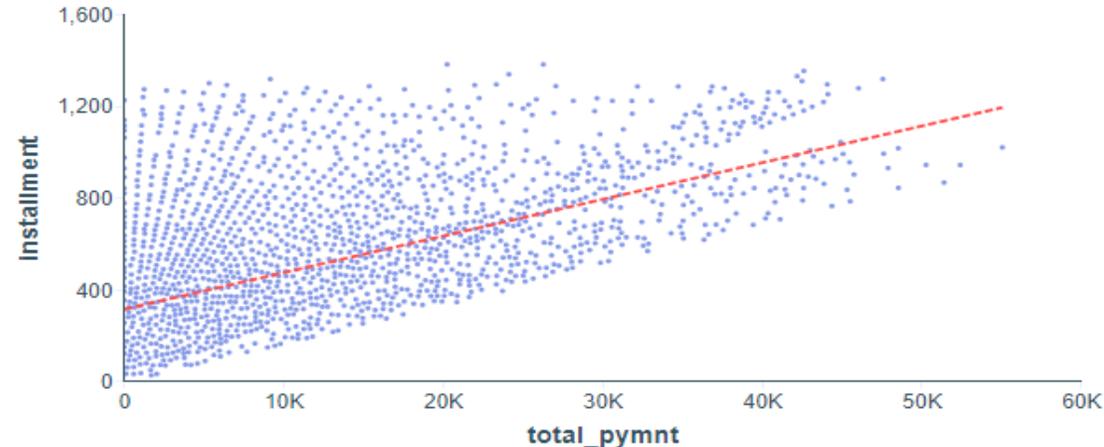
Last 7 days

4,000 5,000 6,000 7,000 8,000

purpose

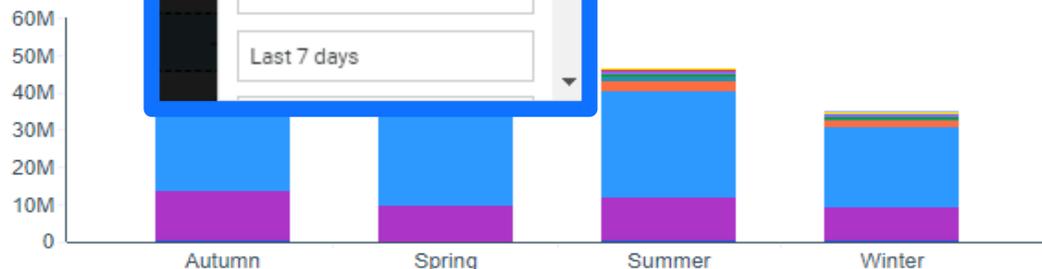
Installment and Total Payment Correlation

There is a correlation between installment and total_pymnt
Correlation Score = 0.5



Loan Amount and

loan_amount

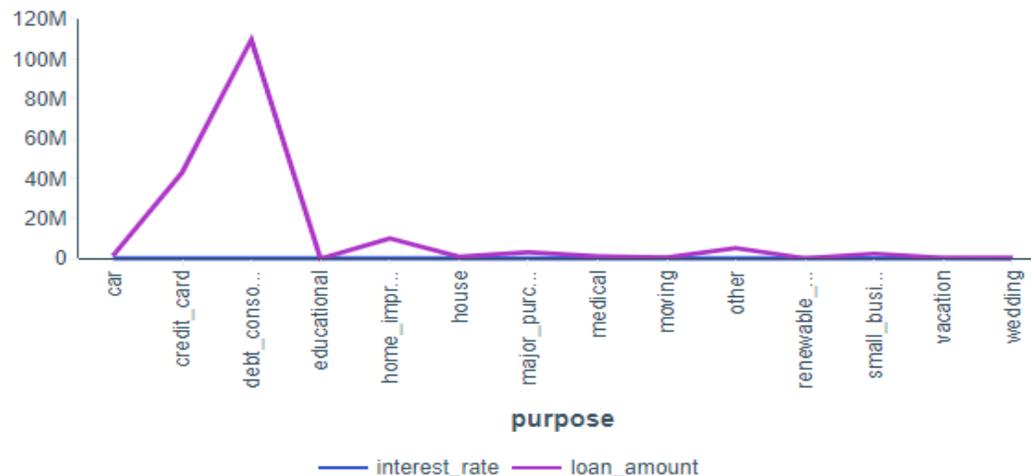


Northern Season

purpose

- car
- credit_card
- debt_consolidation
- educational
- home_improvement
- house
- major_purchase
- medical
- moving
- other
- renewable_energy
- small_business
- vacation
- wedding

Financials by Purpose of Loan



Synonyms Describe (and simplify) the Data Source

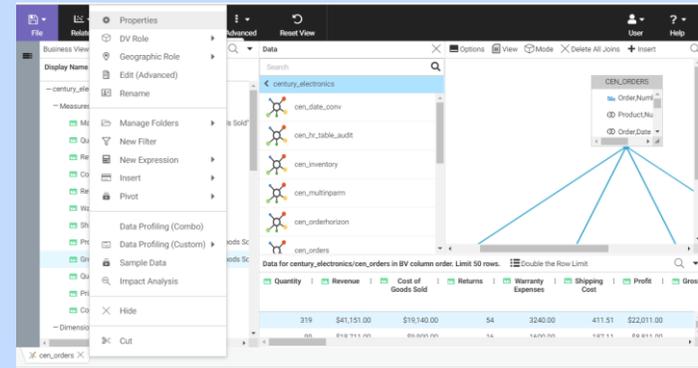
IBM i Anywhere
IBM i Everywhere

Data Sources

- Db2 for i Files/Tables
- Query/400 Definitions
- Log Files (Journal Receivers)
 - Mostly for ETL purposes
- **Db2 or RPG Stored Procedures**
- **Db2 SQL Views**
- **SQL Statements**
 - **EZ-Report makes this very EASY**
- Non Db2 Databases
 - Postgres, MySQL, Oracle, et.al.
- **IBM i Services**

Report
Writer
Productivity

Simplified Data Perspective “Meta data”

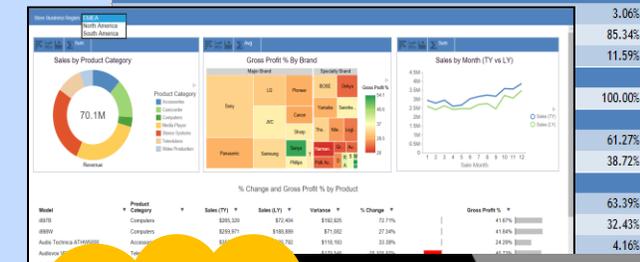


SYNONYMS

AND ALL ON IBM i



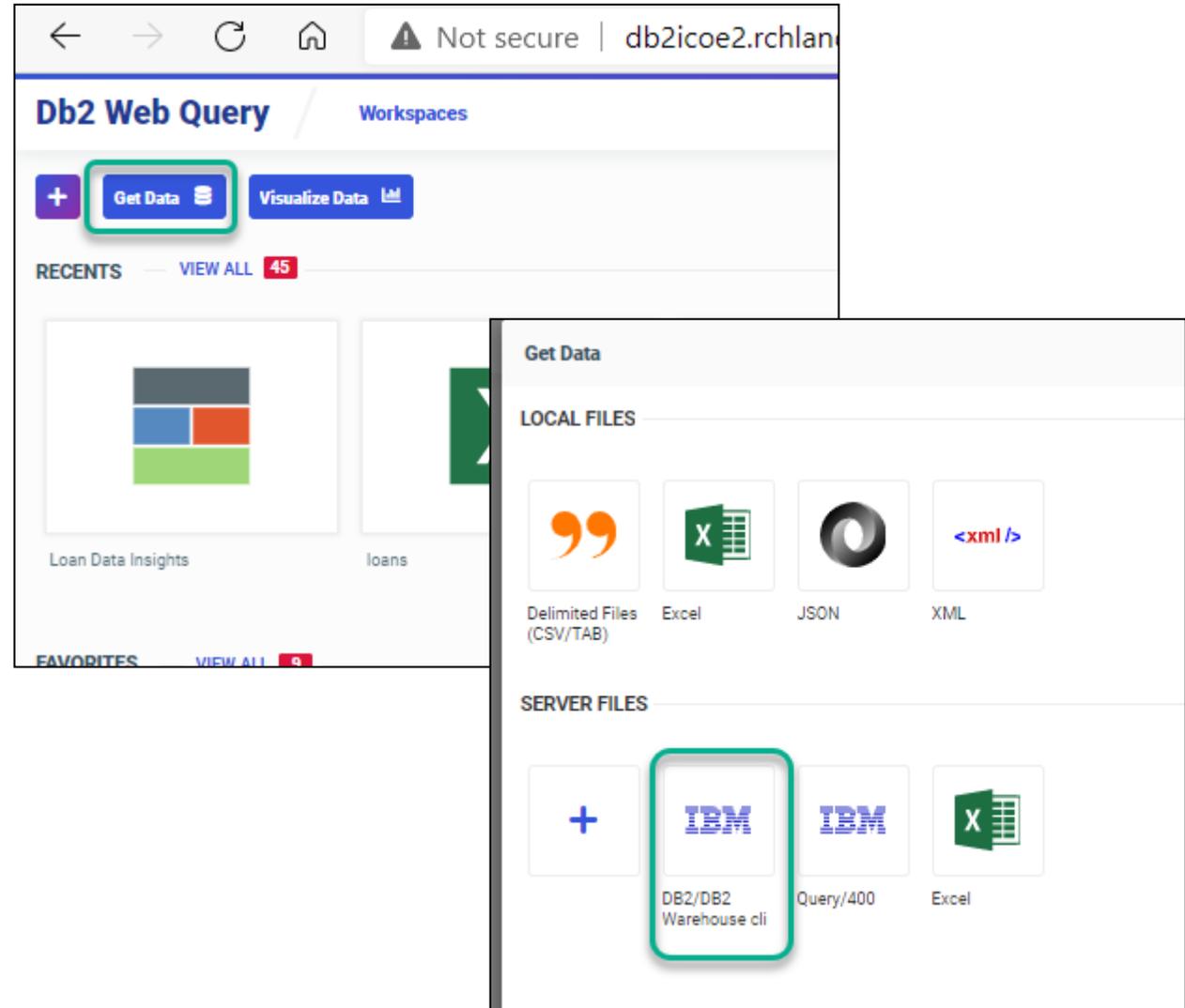
Product Type	Product Category	Revenue	As a Percent of Product Category
Audio	Amplifiers/PreAmps/Tuners	\$42,374,428.00	11.07%
	Audio Systems	\$122,345,680.00	31.97%
	CD Players and Recorders	\$53,847,459.00	14.07%
	MP3	\$43,491,588.00	11.36%
	Receivers	\$35,907,113.00	9.38%
	Speakers	\$84,717,053.00	22.13%
Subtotal: Audio		\$382,683,321.00	



Single Version
of the Truth !!!

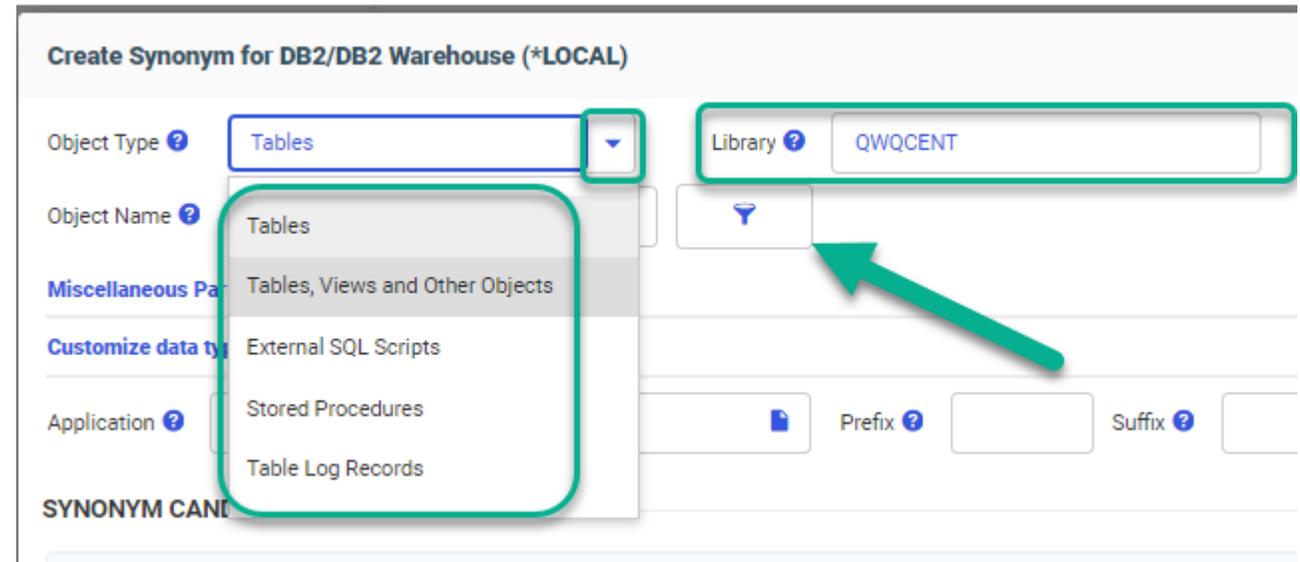
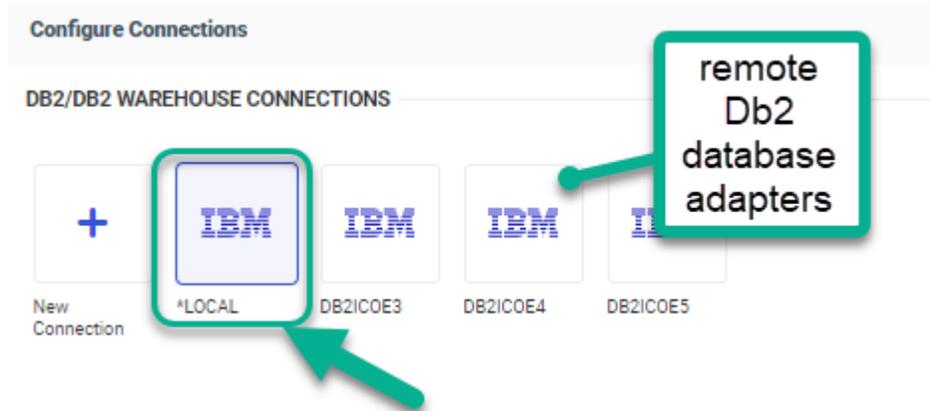
Building a Synonym from Scratch

- Get Data to create a new Synonym
- Choose Db2/Db2 Warehouse Adapter



Building a Synonym from Scratch

- Choose *LOCAL for Db2 database in the same partition/server where Db2 Web Query is installed
 - Note you can also choose remote server adapters to access remote databases
- Use the Object Type Drop down to select your source
 - **Tables, Views, and Other Objects**
 - **Uploaded SQL Script File**
 - Note: I'm not going to cover this option because you now have EZ-Report to auto generate synonym and report
 - **Stored Procedure**
 - HINT: When you create a synonym over a stored procedure, you MUST enter valid values for the INPUT fields during creation



Building a Synonym from Scratch

The screenshot shows the 'Create Synonym for DB2/DB2 Warehouse (*LOCAL)' interface. Key elements include:

- Object Type:** 'Tables, Views and Other Objects' (dropdown)
- Library:** A text input field with a callout: 'Application Folder where your synonym will be stored'.
- Object Name:** A text input field.
- Miscellaneous Parameters:**
 - Application:** 'demo' (dropdown)
 - Prefix:** 'SERVICE_' (text input)
 - Suffix:** '_VIEW' (text input)
- SYNONYM CANDIDATES:** A table with columns 'Table Name', 'Library/Schema', and 'Type'.

Table Name	Library/Schema	Type
<input checked="" type="checkbox"/> GET_PERCENT_DISK_USED	MACKD	VIEW
<input type="checkbox"/> CLAIMS	MACKD	TABLE
<input type="checkbox"/> CLAIMS_PAYMENTS_BY_TYPE	MACKD	VIEW
- Row Limit:** 'Maximum' (dropdown)
- Search:** A search input field.

Callouts provide additional guidance:

- 'Application Folder where your synonym will be stored' points to the Library field.
- 'Hint: Give your synonym name a prefix and suffix' points to the Prefix and Suffix fields.
- 'Increase this size if you don't see your view' points to the Row Limit dropdown.

- Make (multiple?) Selections, click on ADD
- Creating a synonym over a bunch of files is a very short exercise, but then.....you might want to
 - Create file relationships (joins, dimensions)
 - Format fields (add Euro/Pound sign to monetary fields)
 - Deal with those pesky LEGACY Date Fields (join to a date dimension table)
 - Create Derived (calculated) Fields using Express Builder and Built-in (or Db2 SQL) FUNCTIONS

Building a Synonym from Scratch

The screenshot displays the IBM Db2 Business View interface. On the left, a list of fields and their corresponding expressions is shown. The main area features a visual query editor with a central table (CEN_ORDERS) and three joined tables (CEN_INVENTORY, CEN_PLANT, and CEN_STORES). A data table at the bottom shows sample data for the query. Annotations in green boxes highlight key features: 'Fields from File(s)' points to the field list; 'Derived Fields and Functions' points to the expression list; 'Join Editor' points to the table relationships; 'Sample Data as you go' points to the data table; and 'Dimension Hierarchies enable drill-downs' points to the left-hand navigation menu.

Display Name (Title)	Expression
Revenue	
Cost of,Goods Sold	
Returns	
Warranty,Expenses	
Shipping,Cost	
orddat	"Order,Date"
Profit	Revenue - "Cost of,Goods Sold"
Gross_Profit	Revenue - "Cost of,Goods Sold"
PERIOD	EDIT("Order Year") '-' EDIT("Order Month")
CR	HEXBYT(13, 'A1')
LF	HEXBYT(37, 'A1')
Margin	Profit / "Cost of,Goods Sold" * 100
PERIOD1	EDIT("Order Year") '-' EDIT("Order Month")
Today	&DATEYYMD

Requested Ship Date	Actual Ship Date	Invoice Date	Order Number	Product Number	Store Code	Code	Date	Order Date	Sales Rep	Qu
2022/01/20	2021/11/21	2021/12/03	28003	2005	9999CE	LA	2021/12/01	2021/10/17	Web	
2022/01/18	2022/01/16	2022/01/29	28003	3004	9999CE	LA	2022/01/29	2021/10/17	Web	
2021/11/27	2021/12/14	2021/12/24	28003	4022	9999CE	LA	2021/12/23	2021/10/17	Web	

Auto Generate Synonyms (and sometimes Reports Too)

- Query/400 Import function using Query/400 Adapter
 - Auto generates a synonym AND a report from one or more Query/400 Definitions
 - MODERNIZE – enhance the report and/or synonym
- Spreadsheet Upload
 - Auto generates a synonym after uploading Excel data into Db2 table (stored in web query's REPOSITORY)
 - Enhance the synonym (maybe JOIN to your production files represented by another synonym)
- **Automated Insights**
 - Generates a handful of charts providing correlations, outliers and time-series analysis
 - You just saw this
- **EZ-Report**
 - Generates a synonym and a report from an SQL statement (or over a file)
 - Coming up Soon 😊
- Conversion Tools (Mostly Showcase Strategy)

To SQL, or Not to SQL

IBM i Anywhere
IBM i Everywhere

Monday, February 19, 2018

To SQL or not to SQL - with Db2 Web Query

Sometimes I find myself [talking out of both sides of my mouth](#) when discussing Db2 Web Query capabilities. The term is related to contradicting yourself – maybe saying one thing to one person, and another, opposite thing to another.

While certainly not trying to deceive anyone, the association with Db2 Web Query is about whether you need to be an SQL programmer to use it. The short answer is, ABSOLUTELY NOT. However, out the other side of my mouth, I have to say, it certainly can be an advantage if you do know SQL!

Db2 Web Query provides a graphical interface to building reports, dashboards, and BI applications. With the metadata interface simplifying the database structures for report authors, the graphical interface is easily used by those other than programmers and database experts. The “Business Analyst” is a classic power user of Db2 Web Query, building reports from scratch and never having to code at an SQL or RPG level to accomplish their goals – because under the covers Db2 Web Query generates the necessary code to access the data and provide the report logic, formatting, etc.

While we strongly discourage you from editing any of that code, you can see what is generated by right clicking on a report or chart and choosing (if you have authority) to open **with text editor**. The code probably won't make any sense to you, and you definitely DO NOT want to edit anything there as it might mess up the execution of the report. The code is stored in IBM i in something we call the repository.

Many people have asked the Db2 Web Query team if you can write your own, or leverage existing SQL code in a report. So out the other side of my mouth I say “Absolutely!” Reports, charts, and dashboards can contain data from many different data sources. Db2 file/tables are the most obvious data source, but did you know you can also leverage existing Query/400 definitions, SQL Views, SQL (or any HLL) stored procedures, Db2 functions (including user defined functions), and uploaded SQL

Links

[DB2 Web Query Home Page](#)

[DB2 Web Query Technical Wiki](#)

[DB2 for i Blog](#)

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Powered by [Google Translate](#)

About Me



Doug Mack

Doug Mack leads the Analytics team within the DB2 for i Lab Services group. The broader DB2

Synonyms Over SQL Objects Can be Very Useful

- You want to leverage already existing SQL objects that cobble together data
 - Note you could also build a synonym over an (“externalized”) RPG Program
- Not all Db2 Join options are supported in a Synonym
 - Exception Joins, UNIONS
 - **New news:** Unions aren’t supported in a synonym, but are supported in a new “data flow” object!
- Dealing with Multiple Member Files
 - Use SQL Aliases
- Data Wrangling is required and more efficient in SQL
 - When a report is run you need to do a lot of data processing like what you might do with RPG and use of temp or work files or with a CHAINED (multiple pass) Query/400 report
 - You want to consolidate data from multiple systems into a single report
- Complex data relationship requirements are easier using advanced SQL Functions
 - Use of Advanced SQL to pre-process data
 - OLAP, Hierarchical queries, Common Table Expressions, Pivoting Data

Pushing the work to Db2 will always be more efficient

Auto Generate Synonym (and Report) over IBM i Services

- Shipped as SQL View, SQL Procedure, or SQL Table Function

Security Services

QSYS2.AUTHORITY_COLLECTION – VIEW
QSYS2.AUTHORITY_COLLECTION_DLO – VIEW
QSYS2.AUTHORITY_COLLECTION_FSOBJ – VIEW
QSYS2.AUTHORITY_COLLECTION_LIBRARIES – VIEW
QSYS2.AUTHORITY_COLLECTION_OBJECT – VIEW
QSYS2.AUTHORIZATION_LIST_INFO – VIEW
QSYS2.AUTHORIZATION_LIST_USER_INFO – VIEW
QSYS2.CERTIFICATE_INFO – UDTF
QSYS2.DRDA_AUTHENTICATION_ENTRY_INFO – VIEW
QSYS2.FUNCTION_INFO – VIEW
QSYS2.FUNCTION_USAGE – VIEW
QSYS2.GROUP_PROFILE_ENTRIES – VIEW
QSYS2.OBJECT_OWNERSHIP – VIEW
QSYS2.OBJECT_PRIVILEGES – UDTF & VIEW
QSYS2.SECURITY_INFO – VIEW
QSYS2.SQL_CHECK_AUTHORITY – UDF
QSYS2.USER_INFO – VIEW
QSYS2.USER_INFO_BASIC – VIEW
SYSPROC.SET_COLUMN_ATTRIBUTE – PROCEDURE
SYSTOOLS.CHANGE_USER_PROFILE – UDTF

Spool Services

QSYS2.OUTPUT_QUEUE_ENTRIES – UDTF & VIEW
QSYS2.OUTPUT_QUEUE_ENTRIES_BASIC – VIEW
QSYS2.OUTPUT_QUEUE_INFO – VIEW
SYSTOOLS.DELETE_OLD_SPOOLED_FILES – PROCEDURE
SYSTOOLS.GENERATE_PDF – UDF
SYSTOOLS.SPOOLED_FILE_DATA – UDTF

Storage Services

QSYS2.ASP_INFO – VIEW
QSYS2.ASP_JOB_INFO – VIEW
QSYS2.ASP_VARY_INFO – VIEW
QSYS2.MEDIA_LIBRARY_INFO – VIEW
QSYS2.NVME_INFO – VIEW
QSYS2.SYSDISKSTAT – UDTF & VIEW
QSYS2.SYSTMPSTG – VIEW
QSYS2.USER_STORAGE – VIEW

Journal Services

QSYS2.DISPLAY_JOURNAL – UDTF
QSYS2.JOURNAL_INFO – VIEW
QSYS2.JOURNALED_OBJECTS – VIEW
SYSTOOLS.AUDIT_JOURNAL_nn – UDTFs

Java Services

QSYS2.JVM_INFO – VIEW
QSYS2.SET_JVM – PROCEDURE

Librarian Services

QSYS2.JOURNAL_INHERIT_RULES – VIEW
QSYS2.LIBRARY_INFO – UDTF
QSYS2.LIBRARY_LIST_INFO – VIEW
QSYS2.OBJECT_STATISTICS – UDTF

System Health Services

QSYS2.SYSLIMITS – VIEW
QSYS2.SYSLIMITS_BASIC – VIEW
QSYS2.SYSLIMTBL – TABLE

IBM i Services are SQL Statements

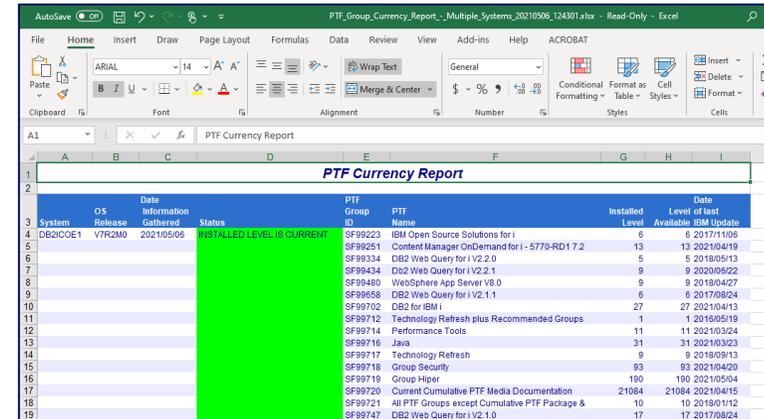
Use ACS Insert from Examples

```
Untitled* - Run SQL Scripts - db2icoe4.rchland.ibm.com(Db2icoe4)
File Edit View Run VisualExplain Monitor Options Connection Tools Help
[Icons]
9  -- description: Security - Review *ALLOBJ users
10 --
11 -- Which users have *ALLOBJ authority either directly
12 -- or via a Group or Supplemental profile?
13 --
14 SELECT AUTHORIZATION_NAME,
15        STATUS,
16        NO_PASSWORD_INDICATOR,
17        PREVIOUS_SIGNON,
18        TEXT_DESCRIPTION
19 FROM QSYS2.USER_INFO
20 WHERE SPECIAL_AUTHORITIES LIKE '%*ALLOBJ%'
21        OR AUTHORIZATION_NAME IN (SELECT USER_PROFILE_NAME
22                                FROM QSYS2.GROUP_PROFILE_ENTRIES
23                                WHERE GROUP_PROFILE_NAME IN (SELECT AUTHORIZATION_NAME
24                                                            FROM QSYS2.USER_INFO
25                                                            WHERE SPECIAL_AUTHORITIES LIKE '%*ALLOBJ%'))
26 ORDER BY AUTHORIZATION_NAME;
27
28
```

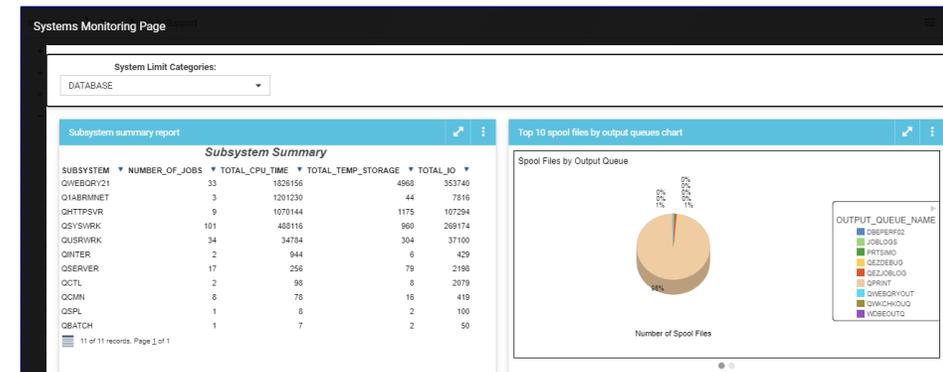
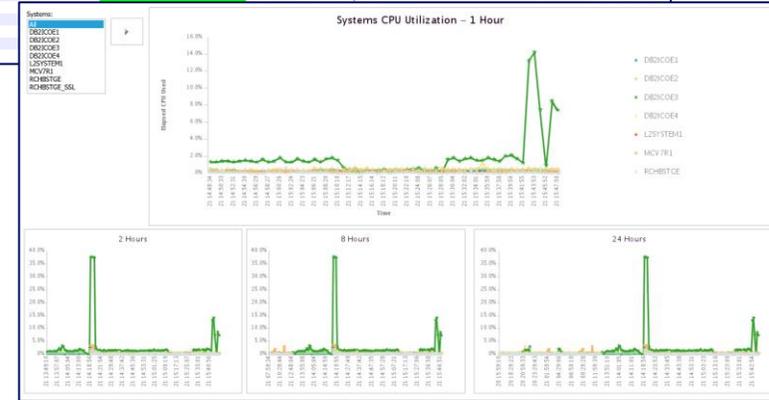
IBM i Services and SYSTOOLS Are Really Awesome!

But now I want to....

- Dump the information into a spreadsheet
- Run a report with simple parameters with an option to choose output format
- Schedule the report to run every Friday night and email the report to stakeholders
- Capture the data on a daily basis and add into a history table for trending reports
- Run the reports against multiple systems/VMs and consolidate data into a central file/table for cross system reporting
- Build charts/visualizations over the services and place on a dashboard
- **Get Spooled File data into a spreadsheet or PDF**



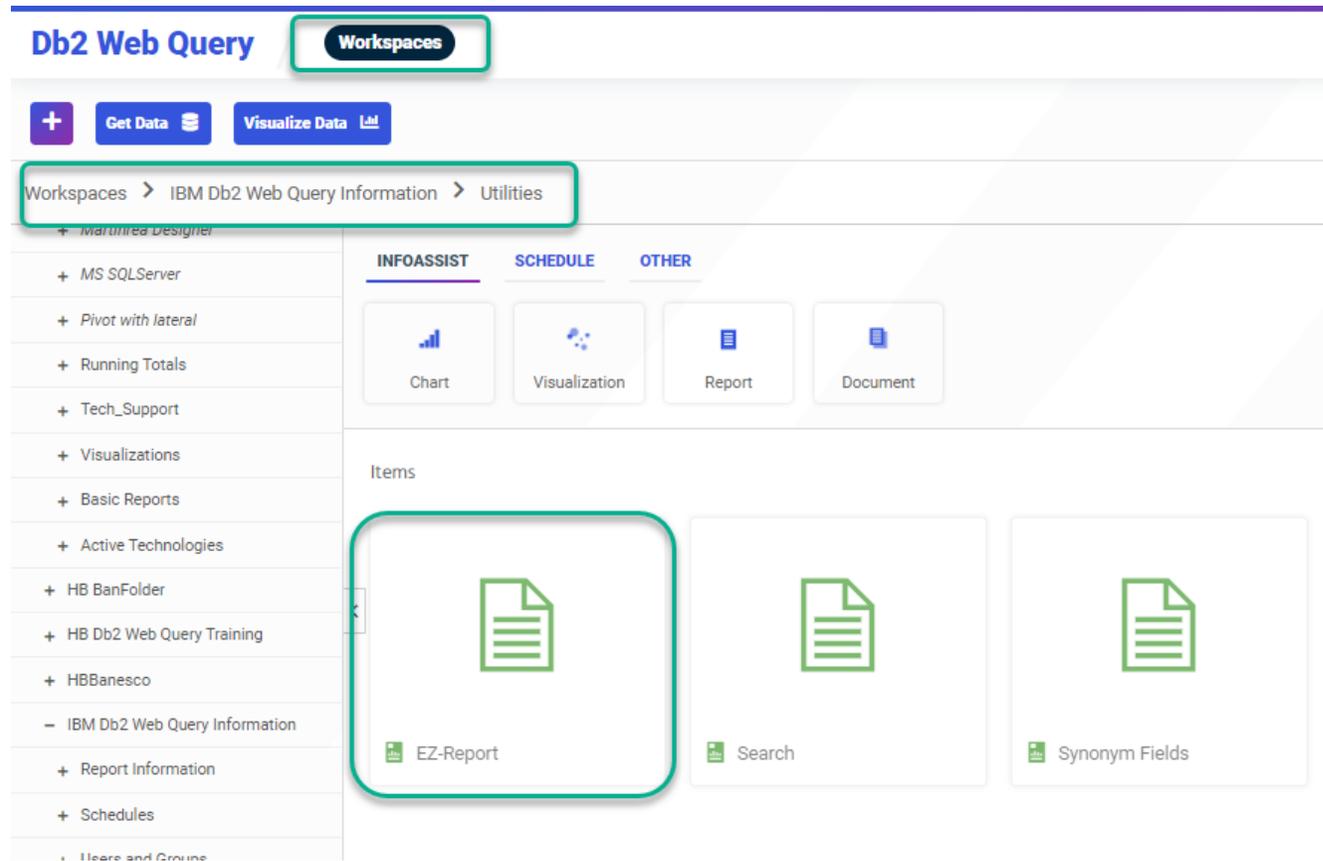
Date	Information	PTF ID	PTF Name	Installed Level	Date Available
20210506	INSTALLED LEVEL IS CURRENT	SF99223	IBM Open Source Solutions for i	6	6 20171106
		SF99251	Content Manager OnDemand for i - 5770-RD1 7.2	13	13 20210419
		SF99334	DB2 Web Query for i V2.2.0	5	5 20180513
		SF99434	DB2 Web Query for i V2.2.1	9	9 20200922
		SF99480	WebSphere App Server V8.0	9	9 20180427
		SF99558	DB2 Web Query for i V2.1.1	6	6 20170824
		SF99702	DB2 for IBM i	27	27 20210413
		SF99712	Technology Refresh plus Recommended Groups	1	1 20160519
		SF99714	Performance Tools	11	11 20210324
		SF99716	Java	31	31 20210323
		SF99717	Technology Refresh	9	9 20180913
		SF99718	Group Security	93	93 20210420
		SF99719	Group Hiper	100	100 20210504
		SF99720	Current Cumulative PTF Media Documentation	21084	21084 20210415
		SF99721	All PTF Groups except Cumulative PTF Package &	10	10 20180112
		SF99747	DB2 Web Query for i V2.1.0	17	17 20170824



Auto Generate Synonym and Report from **EZ-Report** Utility

Navigate to IBM Db2 Web Query Information -> Utilities Folder

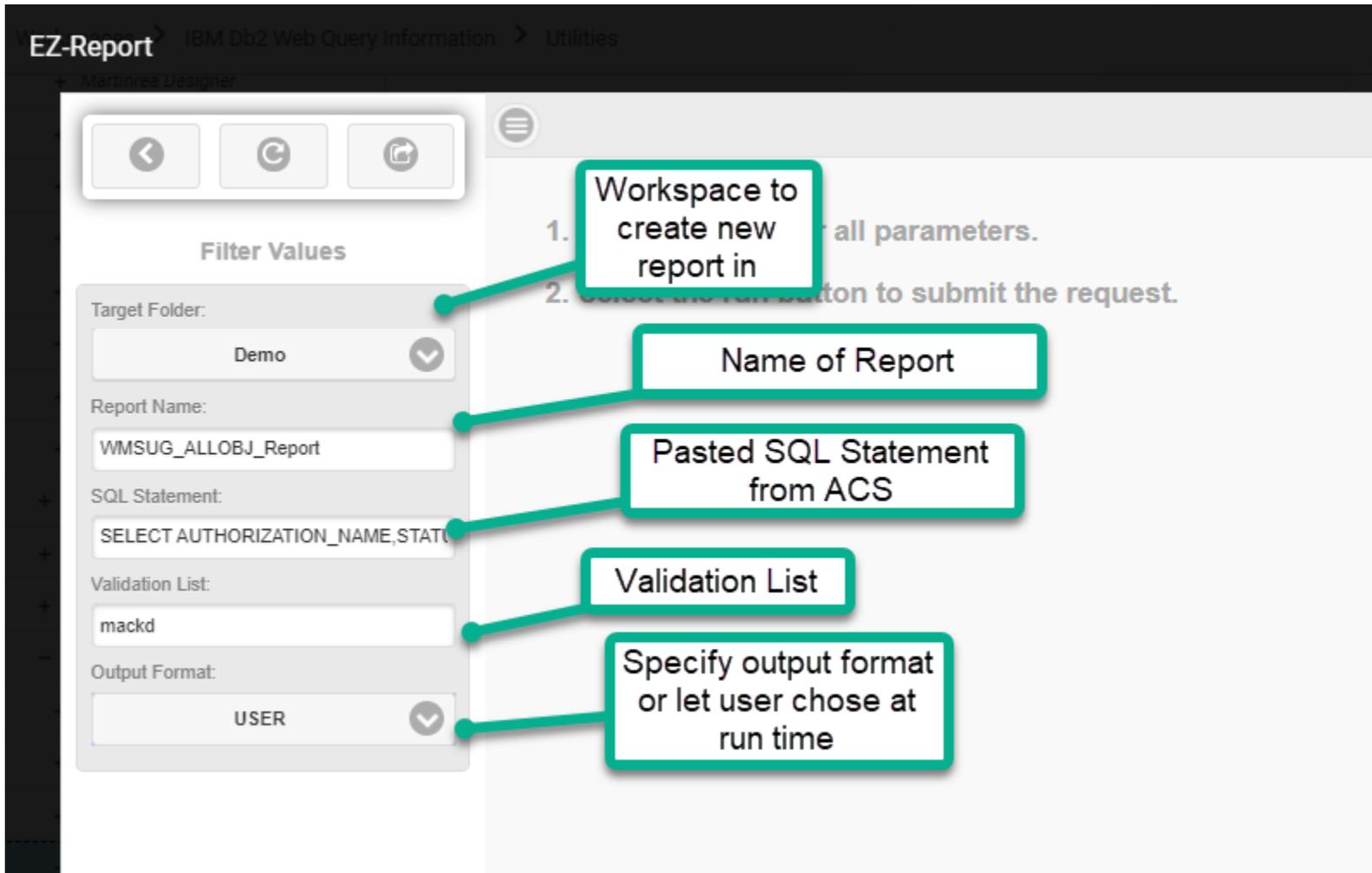
Double click on EZ-Report



The screenshot displays the IBM Db2 Web Query Information interface. At the top, the title "Db2 Web Query" is visible, along with a "Workspaces" button. Below this, there are buttons for "Get Data" and "Visualize Data". A breadcrumb navigation path is shown: "Workspaces > IBM Db2 Web Query Information > Utilities". The main content area is divided into sections: "INFOASSIST", "SCHEDULE", and "OTHER". Under "INFOASSIST", there are four icons: "Chart", "Visualization", "Report", and "Document". Below these, the "Items" section contains three cards: "EZ-Report", "Search", and "Synonym Fields". The "EZ-Report" card is highlighted with a green rounded rectangle. The left sidebar lists various folders and reports, including "MS SQLServer", "Pivot with lateral", "Running Totals", "Tech_Support", "Visualizations", "Basic Reports", "Active Technologies", "HB BanFolder", "HB Db2 Web Query Training", "HBBanesco", "IBM Db2 Web Query Information", "Report Information", "Schedules", and "Users and Groups".

Auto Generate Synonym and Report from EZ-Report Utility

Navigate to IBM Db2 Web Query Information -> Utilities Folder
Double click on EZ-Report



The screenshot shows the EZ-Report utility configuration page. The breadcrumb navigation is "EZ-Report > IBM Db2 Web Query Information > Utilities". The page has a "Filter Values" section with the following fields:

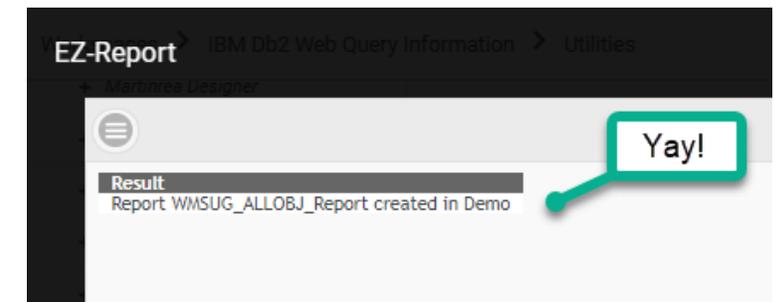
- Target Folder: Demo
- Report Name: WMSUG_ALLOBJ_Report
- SQL Statement: SELECT AUTHORIZATION_NAME, STAT...
- Validation List: mackd
- Output Format: USER

Callouts point to the following elements:

- Workspace to create new report in (points to the Target Folder dropdown)
- Name of Report (points to the Report Name text input)
- Pasted SQL Statement from ACS (points to the SQL Statement text input)
- Validation List (points to the Validation List text input)
- Specify output format or let user chose at run time (points to the Output Format dropdown)

Instructions on the page:

1. ... all parameters.
2. ... to submit the request.



The screenshot shows the EZ-Report utility result page. The breadcrumb navigation is "EZ-Report > IBM Db2 Web Query Information > Utilities". The page displays a "Result" section with the following text:

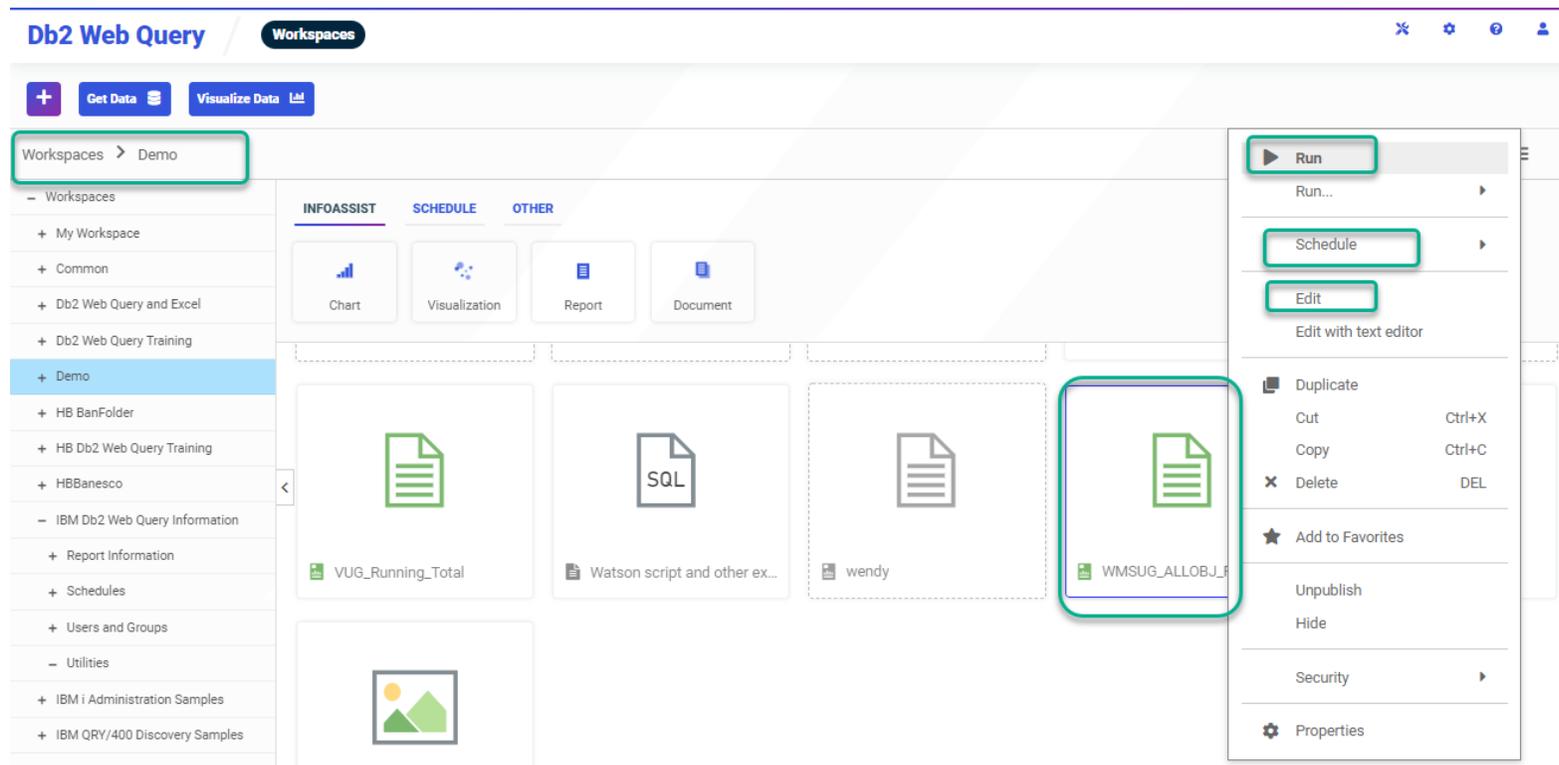
Report WMSUG_ALLOBJ_Report created in Demo

A callout points to the result with the text "Yay!".

Auto Generate Synonym and Report from EZ-Report Utility

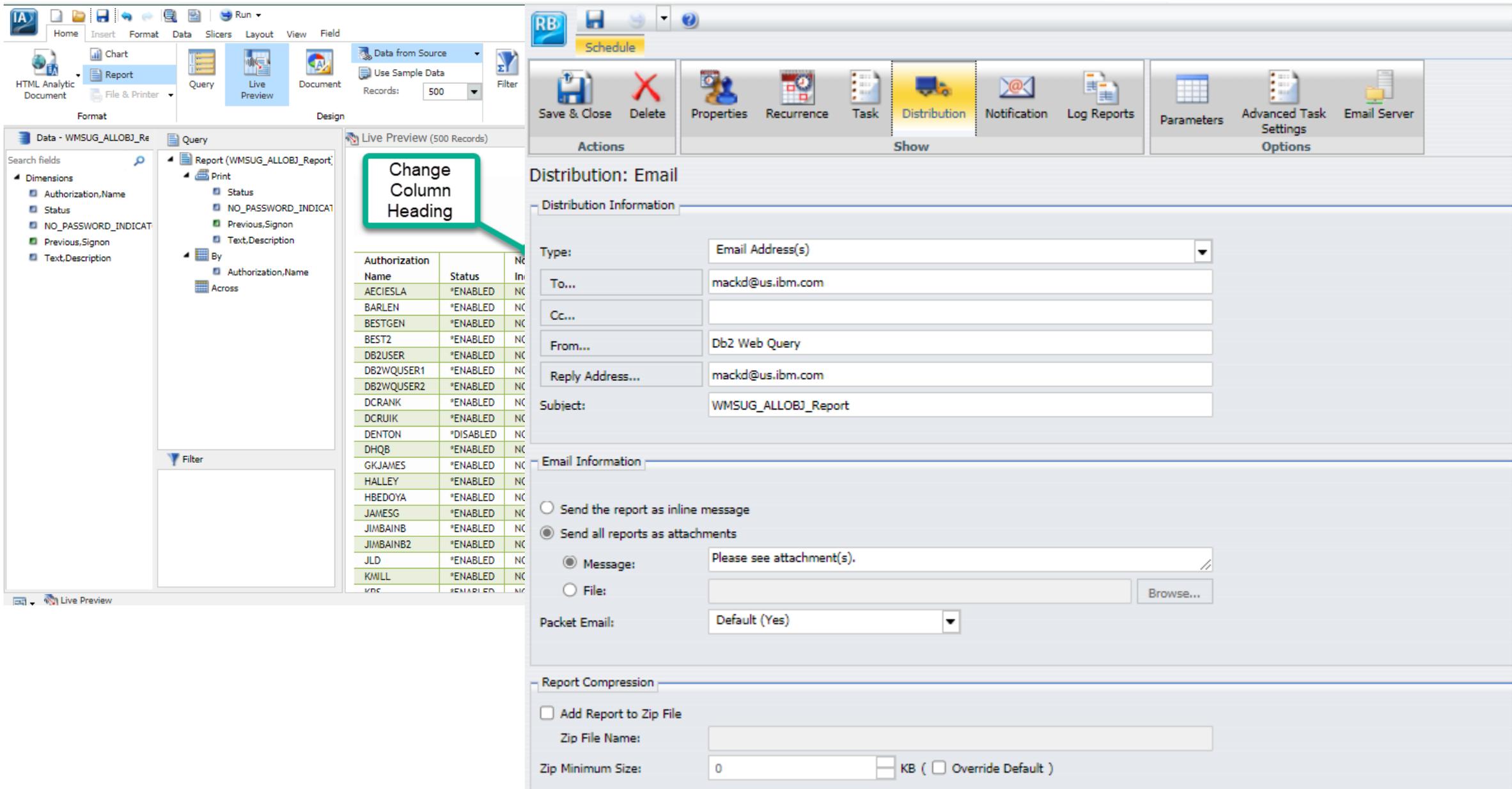
Now What?

- Run Report
- Edit Report
- Schedule the Report to run in batch and distribute via email distribution



The screenshot displays the Db2 Web Query interface. The top navigation bar includes 'Db2 Web Query' and 'Workspaces'. Below this, there are buttons for '+ Get Data' and 'Visualize Data'. The left sidebar shows a tree view of workspaces, with 'Demo' selected. The main workspace area is divided into three tabs: 'INFOASSIST', 'SCHEDULE', and 'OTHER'. Under 'INFOASSIST', there are icons for 'Chart', 'Visualization', 'Report', and 'Document'. The workspace contains several report files: 'VUG_Running_Total', 'Watson script and other ex...', 'wendy', and 'WMSUG_ALLOBJ...'. A context menu is open over the 'WMSUG_ALLOBJ...' file, showing options: 'Run', 'Run...', 'Schedule', 'Edit', 'Edit with text editor', 'Duplicate', 'Cut (Ctrl+X)', 'Copy (Ctrl+C)', 'Delete (DEL)', 'Add to Favorites', 'Unpublish', 'Hide', 'Security', and 'Properties'. The 'Run', 'Schedule', and 'Edit' options are highlighted with green boxes.

Auto Generate Synonym and Report from EZ-Report Utility



The screenshot displays the EZ-Report Utility interface. On the left, the 'Live Preview' window shows a report titled 'Report (WMSUG_ALLOBJ_Report)' with 500 records. A callout box labeled 'Change Column Heading' points to the 'Authorization Name' column in the preview table.

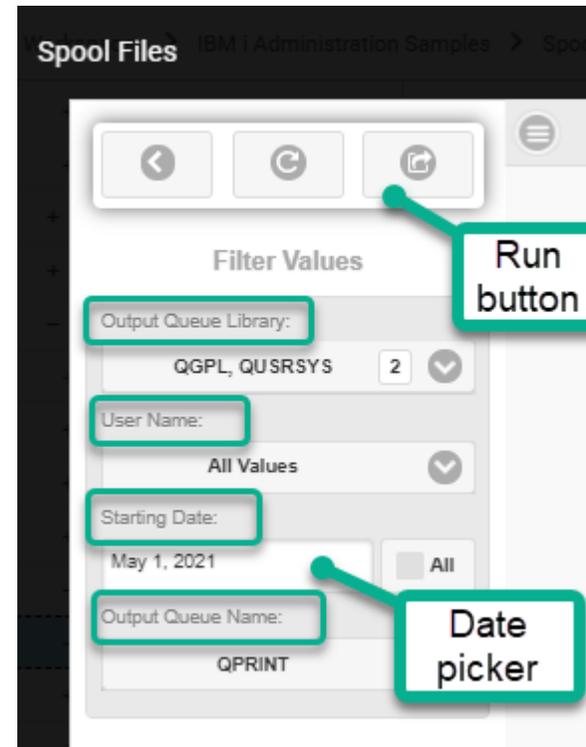
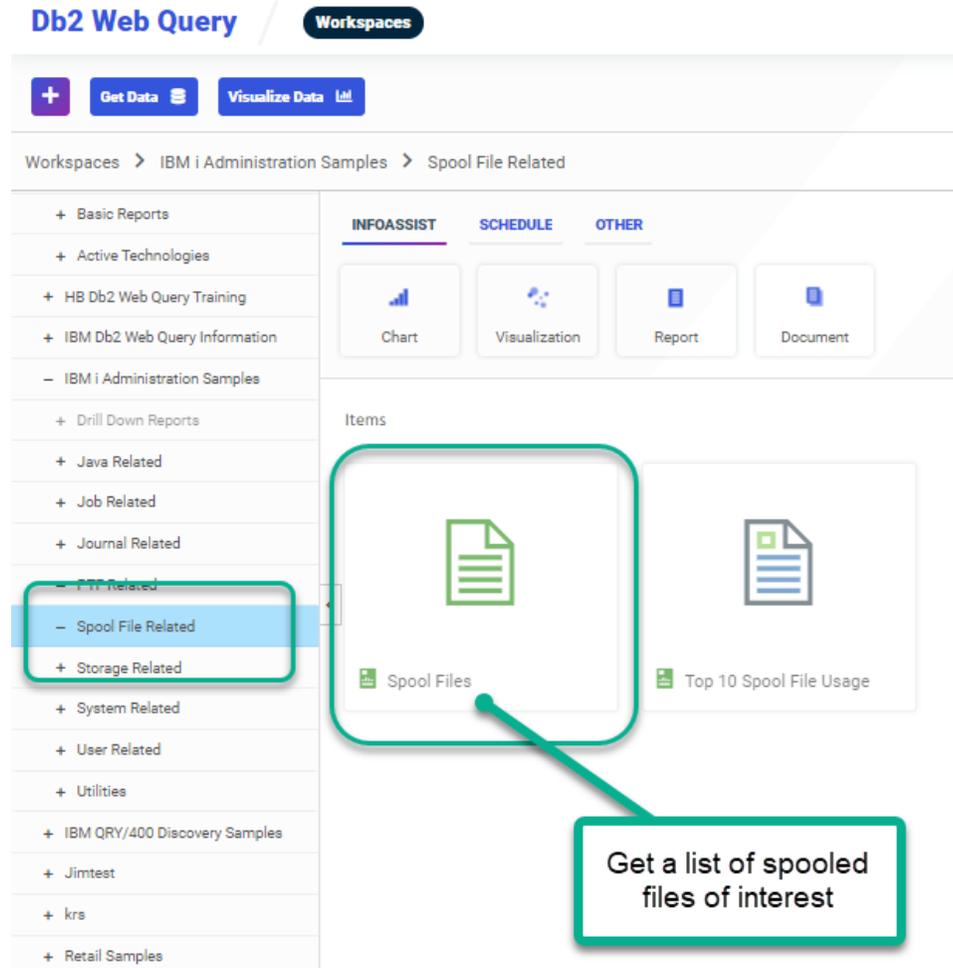
Authorization Name	Status	In
AECIESLA	*ENABLED	NC
BARLEN	*ENABLED	NC
BESTGEN	*ENABLED	NC
BEST2	*ENABLED	NC
DB2USER	*ENABLED	NC
DB2WQUSER1	*ENABLED	NC
DB2WQUSER2	*ENABLED	NC
DCRANK	*ENABLED	NC
DCRUIK	*ENABLED	NC
DENTON	*DISABLED	NC
DHQB	*ENABLED	NC
GKJAMES	*ENABLED	NC
HALLEY	*ENABLED	NC
HBEDOYA	*ENABLED	NC
JAMESG	*ENABLED	NC
JIMBAINB	*ENABLED	NC
JIMBAINB2	*ENABLED	NC
JLD	*ENABLED	NC
KMILL	*ENABLED	NC
KPS	*ENABLED	NC

The right side of the interface shows the 'Distribution: Email' configuration panel. The 'Type' is set to 'Email Address(s)'. The 'To' field is 'mackd@us.ibm.com', 'From' is 'Db2 Web Query', and 'Reply Address' is 'mackd@us.ibm.com'. The 'Subject' is 'WMSUG_ALLOBJ_Report'. Under 'Email Information', 'Send all reports as attachments' is selected, with the message 'Please see attachment(s)'. The 'Packet Email' is set to 'Default (Yes)'. The 'Report Compression' section has 'Add Report to Zip File' unchecked, with a 'Zip File Name' field and a 'Zip Minimum Size' of 0 KB.

If We Have Time

Spool File to Excel Example

- Run Spool Files report to generate list of spooled files based on selection criteria



Spool File Related

- Run Spool Files report to generate list of spooled files based on selection criteria

Spool Files IBM i Administration Samples > Spool File Related

14 of 14 records, Page 1 of 1

Spool File Listing
Output Queue Lib: 'QGPL' OR 'QUSRSYS'
Output Queue: 'QPRINT'
User:
Starting Date: May 01 2021

Output Queue Library	Output Queue Name	File Create Timestamp	File Entry Number	PDF Link	Excel Link	User	Job	Spool File Name	Size (KB)
QGPL	QPRINT	2021/05/18 21:03:27.184255	1	PDF	Excel	MACKD	331718/MACKD/MACKD	QPQUPRFILE	3,140
		2021/05/18 17:20:04.029103	1	PDF	Excel	HBEDOYA	331710/HBEDOYA/EMPPF	EMPPF	38
		2021/05/18 17:05:27.262410	28	PDF	Excel	HBEDOYA	299824/HBEDOYA/QPRTJOB	EMPPF	38
		2021/05/18 16:49:59.875788	1	PDF	Excel	HBEDOYA		EMPPF	40
		2021/05/18 16:45:04.044068	1	PDF	Excel	HBEDOYA		EMPPF	38
		2021/05/18 16:00:06.350991	27	PDF	Excel	HBEDOYA		EMPPF	38
		2021/05/13 08:04:52.099257	26	PDF	Excel	HBEDOYA		EMPPF	40
		2021/05/12 14:03:53.643267	25	PDF	Excel	HBEDOYA	299824/HBEDOYA/QPRTJOB	EMPPF	40
		2021/05/12 11:45:59.361547	1	PDF	Excel	MACKD	331309/MACKD/QPADEV0003	QPQUPRFILE	3,144
		2021/05/06 09:12:25.487368	24	PDF	Excel	HBEDOYA	299824/HBEDOYA/QPRTJOB	EMPPF	38
		2021/05/05 20:24:42.298251	1	PDF	Excel	QSYS	329982/QSYS/QSLPSVR	QPRINT	28
		2021/05/05 12:08:48.623259	23	PDF	Excel	HBEDOYA	299824/HBEDOYA/QPRTJOB	EMPPF	38
		2021/05/04 16:21:34.290034	22	PDF	Excel	HBEDOYA	299824/HBEDOYA/QPRTJOB	EMPPF	38
		2021/05/04 15:45:50.188847	21	PDF	Excel	HBEDOYA	299824/HBEDOYA/QPRTJOB	EMPPF	38

Report run on Tue, May 18, 2021 at 21.03.51

Click on Excel link

Spool File Related

- Run Spool Files report to generate list of spooled files based on selection criteria

Order Number	Order Date	Requested Ship Date	Actual Ship Date	Receive Date	Price	Cost
54390	2021-12-29	2022-02-08	2022-04-23	2022-04-28	199.00	100.00
54390	2021-12-29	2022-03-29	2022-03-28	2022-04-13	129.00	40.00
54390	2021-12-29	2022-02-01	2022-02-17	2022-02-27	199.00	150.00
54390	2021-12-29	2022-02-13	2022-02-23	2022-03-24	399.00	300.00
54390	2021-12-29	2022-04-04	2022-04-01	2022-04-27	899.00	750.00
54510	2021-12-29	2022-02-19	2022-05-03	2022-05-30	199.00	100.00
54510	2021-12-29	2022-01-30	2022-04-14	2022-05-02	129.00	60.00
54510	2021-12-29	2022-03-22	2022-03-19	2022-04-06	189.00	100.00
54510	2021-12-29	2022-02-14	2022-02-05	2022-02-25	279.00	150.00
54510	2021-12-29	2022-02-12	2022-03-02	2022-03-08	329.00	250.00
54510	2021-12-29	2022-02-15	2022-02-23	2022-03-19	459.00	350.00
54510	2021-12-29	2022-03-21	2022-03-19	2022-03-24	199.00	

Text to
Data to
column-ize
the data



Order Number	Order Date	Requested Ship Date	Actual Ship Date	Receive Date	Price	Cost
54390	12/29/2021	2/8/2022	4/23/2022	4/28/2022	199	100
54390	12/29/2021	3/29/2022	3/28/2022	4/13/2022	129	40
54390	12/29/2021	2/1/2022	2/17/2022	2/27/2022	199	150
54390	12/29/2021	2/13/2022	2/23/2022	3/24/2022	399	300
54390	12/29/2021	4/4/2022	4/1/2022	4/27/2022	899	750
54510	12/29/2021	2/19/2022	5/3/2022	5/30/2022	199	100
54510	12/29/2021	1/30/2022	4/14/2022	5/2/2022	129	60
54510	12/29/2021	3/22/2022	3/19/2022	4/6/2022	189	100
54510	12/29/2021	2/14/2022	2/5/2022	2/25/2022	279	150
54510	12/29/2021	2/12/2022	3/2/2022	3/8/2022	329	250
54510	12/29/2021	2/15/2022	2/23/2022	3/19/2022	459	350

How Was This Done?

- Services and SYSTOOLS are shipped as VIEWS, Stored Procedures, or User Defined Table Functions
- In Db2 Web Query, you build a report over a “synonym” (meta data object) that represents the data source
- The Data Source can be an SQL View, Stored Procedure, View containing a user defined table function (and of course your files/tables, query/400 definitions, etc.)

Report #1: **Query to get a list of Spooled Files using QSYS.OUTPUT_QUEUE_ENTRIES_BASIC service Shipped as a VIEW**

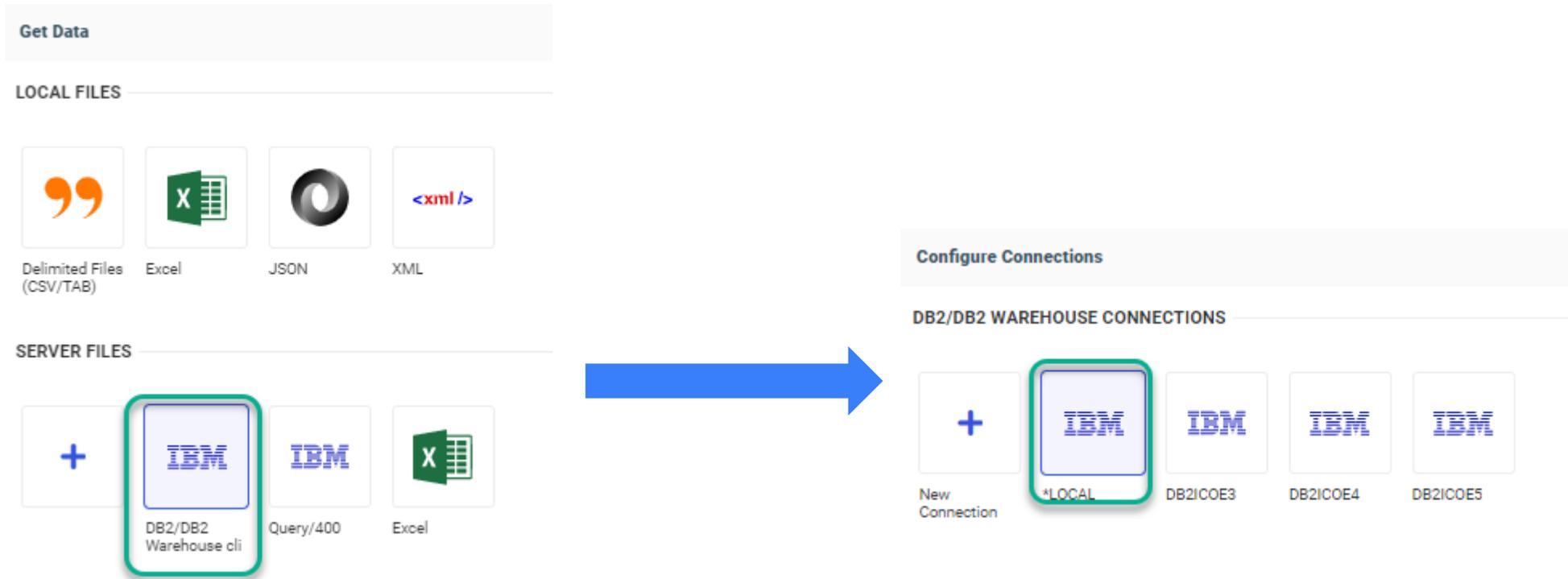
Spool Services				
QSYS2.OUTPUT_QUEUE_ENTRIES	View	Base	Base	SF99702 Level 9
QSYS2.OUTPUT_QUEUE_ENTRIES_BASIC	View	Base	SF99703 Level 11	SF99702 Level 23
QSYS2.OUTPUT_QUEUE_ENTRIES()	Table function	Base	Base	SF99702 Level 9

How Was This Done?

1. Create a Synonym over the VIEW

Within Web Query Home Page, select GET DATA button and Db2/Db2 Warehouse Adapter

Choose *LOCAL to run the service on the same system Db2 Web Query is installed on (note you could also choose a remote server/connection adapter and get the list of spooled files from another partition)!



How Was This Done?

1. Create a Synonym over the VIEW

Set Library to QSYS2

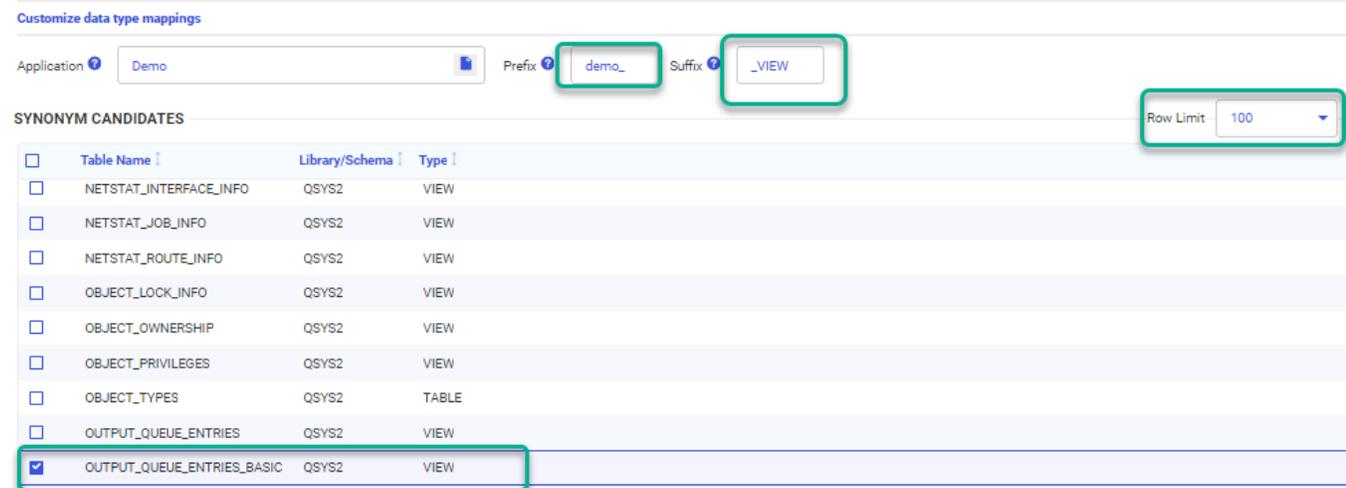
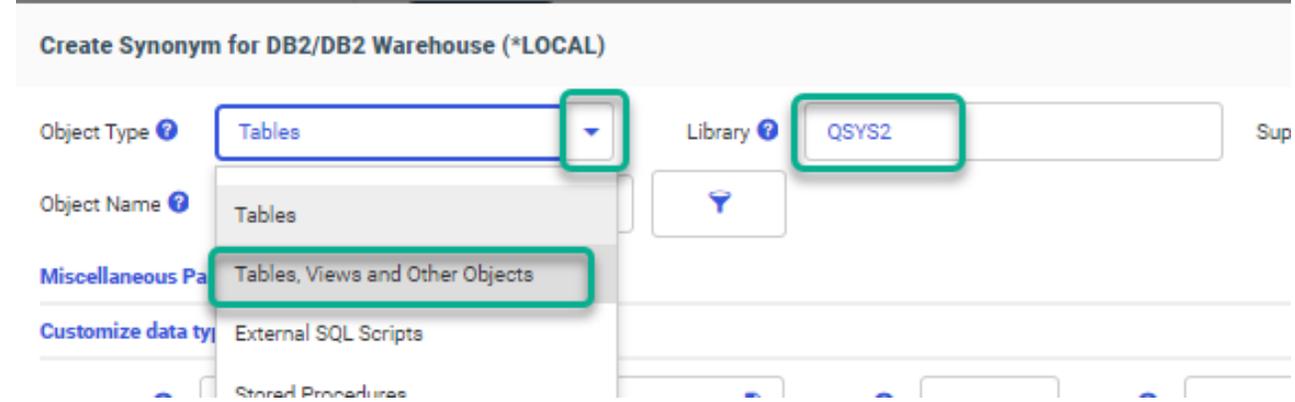
Hit the drop-down button for Object Type and select “Tables, Views, and other Objects”

Select the filter (search) icon to see the list of objects in QSYS2

You may need to set Row Limit to 100

Choose the Output_queue_entries_basic VIEW

Hint: Provide a prefix and suffix to your synonym name to recognize it later and identify it as a VIEW synonym

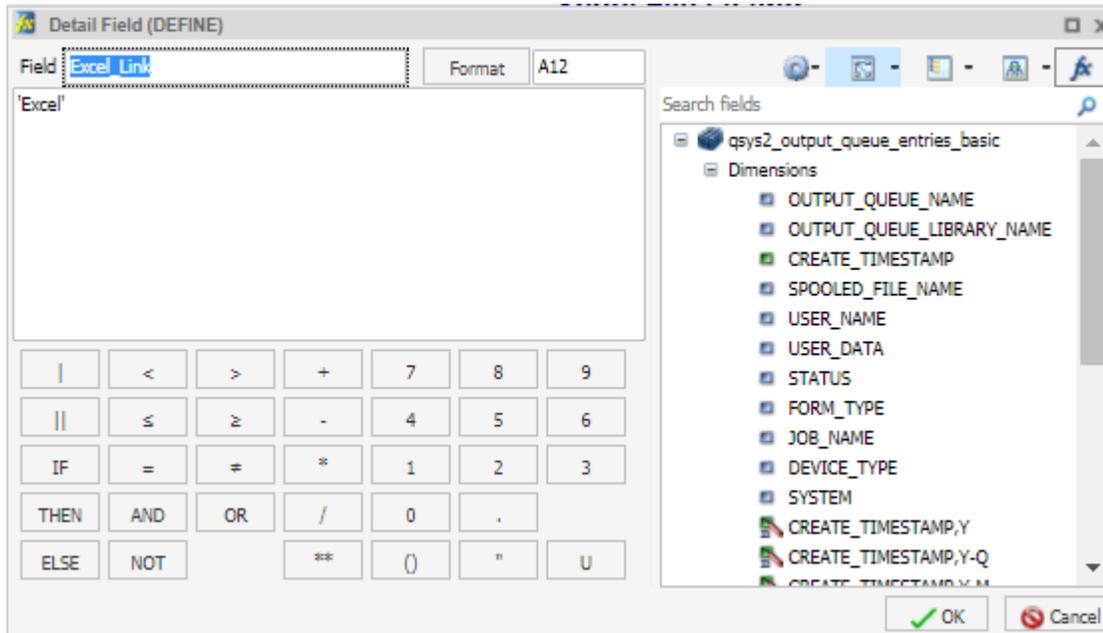


Note: You could also have reversed engineer the select statement using ACS Run SQL Scripts, then copy pasted the view's SELECT statement into our EZ-Report auto generation utility to auto generate the synonym (and a report)!

How Was This Done?

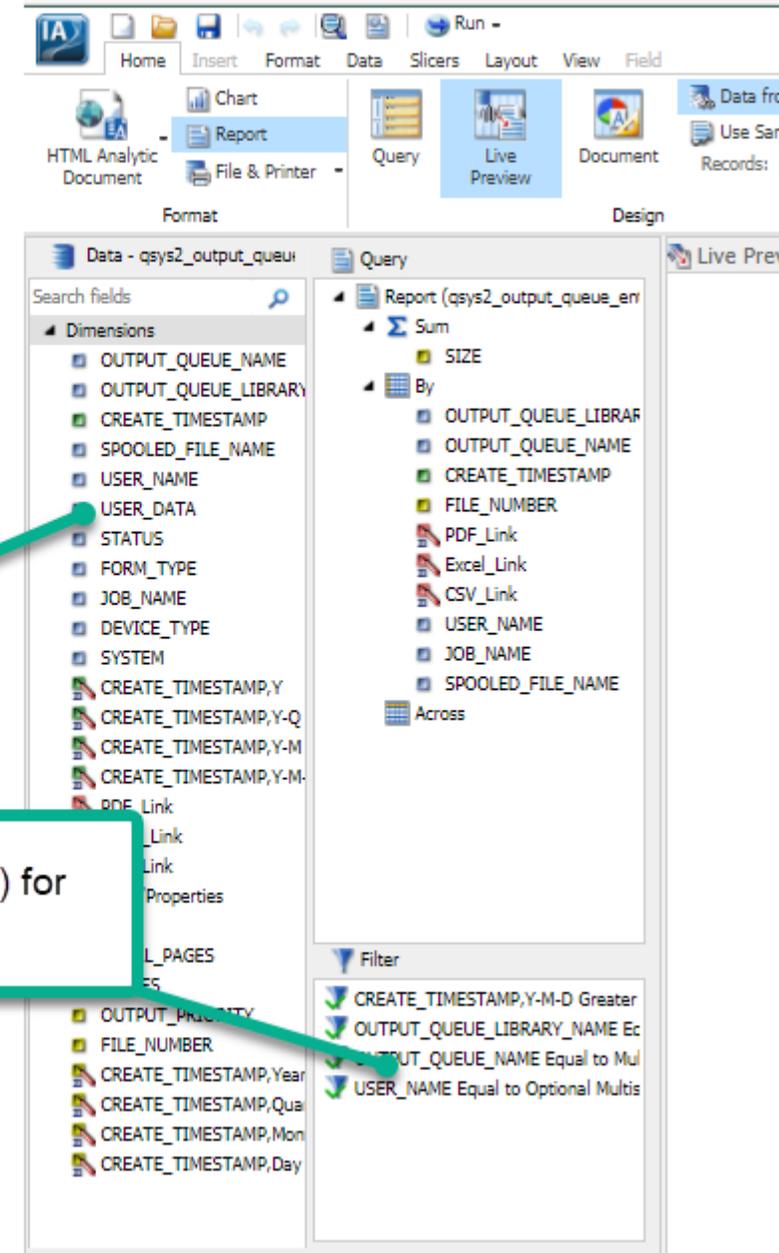
2. Create your report over the synonym!

- Add a dummy “define” field with a value of “Excel” for creating a hyper link (will we do this later)
 - You could create the link on the spooled_file_name field too as an alternative



These are the fields returned by the View

Create prompts (filters) for selection criteria



How Was This Done?

3. Report #2 (to drill down to): Find the Service to Return the data from Spooled File:
QSYSTOOL.SPOOLED_FILE_DATA and note that it is shipped as a table function
4. Because this SQL function requires parameters to be passed to a table function, we're going to need to create a Stored Procedure containing the SELECT FROM TABLE function
 - First, use ACS Run SQL Scripts to test the SQL with the table function

```
1 SELECT * FROM TABLE(SYSTOOLS.SPOOLED_FILE_DATA(  
2                               JOB_NAME           =>'331718/MACKD/MACKD',  
3                               SPOOLED_FILE_NAME =>'QPQUPRFIL'))  
4 ORDER BY ORDINAL_POSITION;
```

ORDINAL_POSITION	SPOOLED_DATA
1	05/18/21 21:03:27
2	Order Order Requested Actual Receive
3	Number Date Ship Date Ship Date Date
4	54390 2021-12-29 2022-02-08 2022-04-23 2022-04-28
5	54390 2021-12-29 2022-03-29 2022-03-28 2022-04-13
6	54390 2021-12-29 2022-02-01 2022-02-17 2022-02-27

How Was This Done?

5. Create your Stored Procedure (Remember, this already provided in the QWQREPOS library)

```
6 SET PATH "QSYS","QSYS2","SYSPROC","SYSIBMADM","MACKD" ;
7
8 CREATE OR REPLACE PROCEDURE MACKD.SPOOLED FILE DETAIL (
9     IN JOB_NAME VARCHAR(28) ,
10    IN SPOOLED_FILE_NAME VARCHAR(10) DEFAULT 'QPJOBLOG'
11    IN FILE_NUMBER VARCHAR(6) DEFAULT '*LAST' )
12    DYNAMIC RESULT SETS 1
13    LANGUAGE SQL
14    SPECIFIC MACKD.SPLFDETAIL
15    NOT DETERMINISTIC
16    MODIFIES SQL DATA
17    CALLED ON NULL INPUT
18    PROGRAM TYPE SUB
19    SET OPTION ALWBLK = *ALLREAD ,
20    ALWCPYDTA = *OPTIMIZE ,
21    COMMIT = *NONE ,
22    DECRESULT = (31, 31, 00) ,
23    DFTRDBCOL = MACKD ,
24    DYNDFTCOL = *NO ,
25    DYNUSRPRF = *USER ,
26    SRTSEQ = *HEX,
27    = V7R3M0
```

```
28 BEGIN
29 DECLARE ERROR_OCCURRED INT ;
30
31 DECLARE C1 CURSOR FOR SELECT *
32     FROM TABLE(SYSTOOLS.SPOOLED_FILE_DATA(JOB_NAME, SPOOLED_FILE_NAME))
33     ORDER BY ORDINAL_POSITION;
34
35 DECLARE CONTINUE HANDLER FOR SQLEXCEPTION SET ERROR_OCCURRED = 1 ;
36
37 OPEN C1 ;
38 END ;
39
```

```
53
54 CALL MACKD.SPOOLED_FILE_DETAIL ('331864/MACKD/MACKD','QPQUPRFIL');
55
56
57
```

ORDINAL_POSITION	SPOOLED_DATA					PRICE	PAGE	COST
1	05/20/21	13:03:15					1	
2	Order	Order	Requested	Actual	Receive			
3	Number	Date	Ship Date	Ship Date	Date			
4	54080	2021-12-18	2022-03-11	2022-03-15	2022-04-12	1,999.00		1,500.00
5	54130	2021-12-18	2022-03-06	2022-03-21	2022-04-06	1,999.00		1,500.00
6	28657	2021-12-04	2022-01-24	2022-01-25	2022-02-22	3,999.00		3,700.00
7	28251	2021-11-28	2022-02-13	2022-02-12	2022-03-12	3,999.00		3,700.00
8	28390	2021-11-28	2022-01-05	2022-01-06	2022-01-10	4,599.00		4,000.00
9	28519	2021-11-28	2022-03-01	2022-03-07	2022-03-14	3,999.00		3,700.00
10	28015	2021-10-17	2021-11-18	2021-11-19	2021-12-25	2,999.00		2,000.00
11	28045	2021-10-17	2021-12-04	2021-12-01	2021-12-27	3,999.00		3,700.00
12	37984	2021-10-02	2021-12-30	2022-03-05	2022-03-09	3,999.00		3,700.00
13	96654	2021-09-28	2021-11-26	2021-12-10	2021-12-22	3,199.00		2,500.00
14	96731	2021-09-16	2021-11-05	2021-11-12	2021-11-24	3,199.00		2,500.00
15	96061	2021-09-06	2021-10-08	2021-10-25	2021-11-24	3,999.00		3,700.00
16	96175	2021-09-06	2021-10-10	2021-10-09	2021-10-12	1,999.00		1,500.00
17	48580	2021-08-29	2021-10-11	2021-10-20	2021-11-11	3,999.00		3,700.00

- Test by calling it with parameters within ACS

How Was This Done?

6. Create a Synonym over your Stored Procedure

Create Synonym for DB2/DB2 Warehouse (*LOCAL)

Object Type ? ▼

Library ? Supply value

Object Name ?

Create Synonym for DB2/DB2 Warehouse (*LOCAL)

Available Objects for DB2/DB2 Warehouse (*LOCAL)

Select	Owner/Schema	Stored Procedure Name
<input checked="" type="radio"/>	MACKD	SPOOLED_FILE_DETAIL

Create Synonym for DB2/DB2 Warehouse (*LOCAL)

Create Synonym for DB2/DB2 Warehouse (*LOCAL)

Selected Parameters

Customize data type mappings

Synonym Name ?

One-Part Name

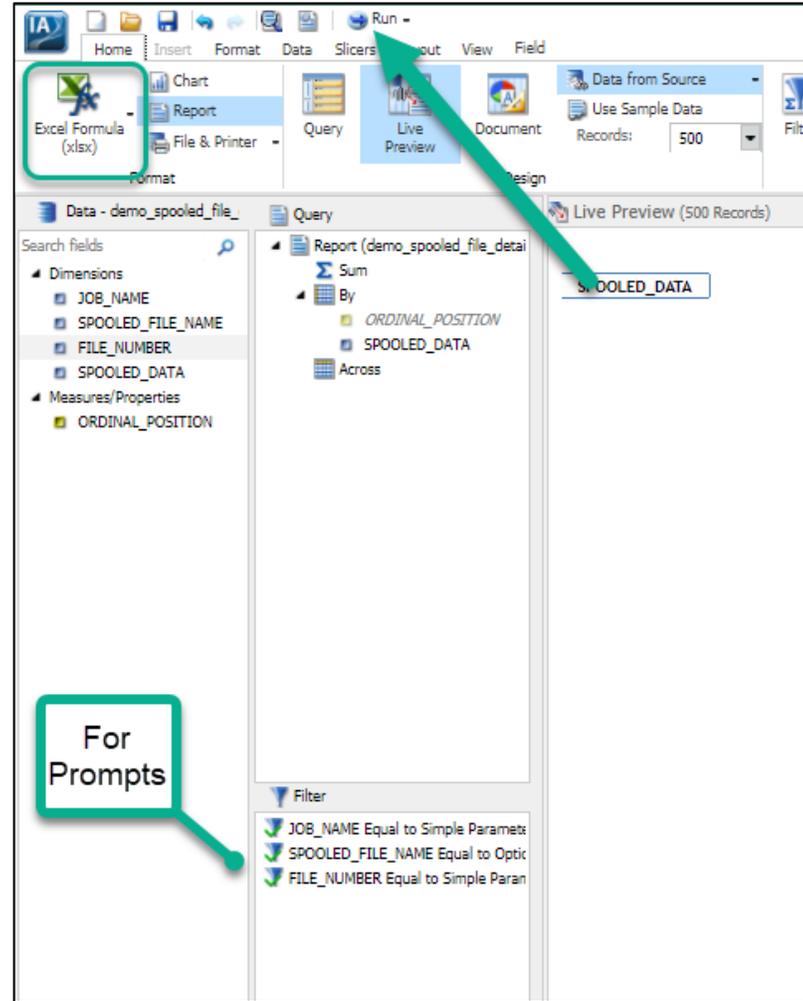
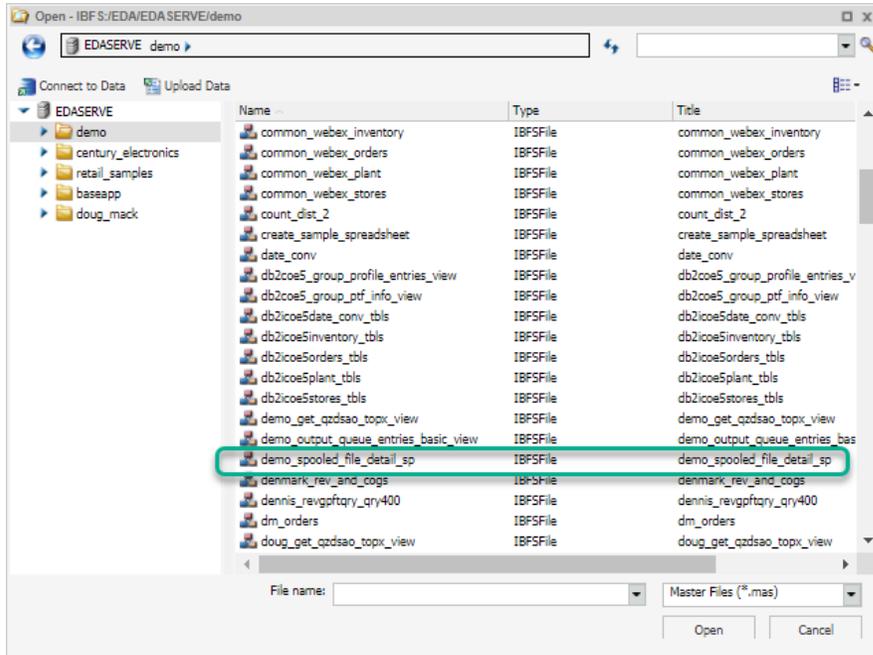
Application ? Prefix ? Suffix ?

<input type="checkbox"/>	Name ↓	Value ↑	Data Type ↓	Col Type ↓	Description ↓
<input checked="" type="checkbox"/>	JOB_NAME	331864/MACKD/MACKD	VARCHAR	IN	
<input checked="" type="checkbox"/>	SPOOLED_FILE_NAME	QPQUPRFL	VARCHAR	IN	
<input checked="" type="checkbox"/>	FILE_NUMBER	1	VARCHAR	IN	

You're prompted for the input fields the SP is expecting and you need to provide VALID values

How Was This Done?

- 6. Create a Report over your new Synonym – specify OUTPUT as .xlsx or .csv



- Add filters for inputting spooled file name/job name
- Test with the RUN button
- Save your Report

Almost Done!

7. Link the Parent report to the Spooled File Detail report we just created

The screenshot shows the IBM i Anywhere interface with a report configuration window open. The 'Excel_Link' field in the query editor is highlighted. The 'Drill Down - Excel_Link' dialog box is open, showing the 'Report*' field set to 'IBFS:/WFC/Repository/Demo/Create_xlsx_from_spooled_file.fe', the 'Description' field set to 'Create xlsx from spooled file', and the 'Parameters' table with fields FILE_NUMBER, SPOOLED_FILE_NAME, and JOB_NAME. The 'Drill Down' button is highlighted in the top right corner.

Name	Value
FILE_NUMBER	QSYS2_OUTPUT_QUEUE_ENTRIES_B...
SPOOLED_FILE_NAME	QSYS2_OUTPUT_QUEUE_ENTRIES_B...
JOB_NAME	QSYS2_OUTPUT_QUEUE_ENTRIES_B...

Output Queue Library	Spool File Name	Size (KB)
DBEPERF02	QDBSTLDHST	36
	QDBSTLDMFV	28
	QDBSTLDHST	36
	QDBSTLDMFV	28
QDBWIZARD2	QSYSVRT	40
	QPJOBLOG	520
	QSYSVRT	40
	QSYSVRT	40
QPADEV0005	QSYSVRT	28
A/EMPPFL1	EMPPFL1	28

- Open Parent Report. Click on Excel_Link then Drill Down Tool
- Browse for the Create xlsx from Spooled File report
- Add the fields to be used to pass the Spooled File information to it, click OK and SAVE!

Whoo Hoo!

Db2 Web Query

Workspaces

+ Get Data Visualize Data

Spool Files

Demo -> A Demo for COMMON Virtual Conf -> Spool Files to Excel

Starting Date: May 19 2021

Output Queue Library	Output Queue Name	File Create Timestamp	File Entry Number	PDF Link	Excel Link	User	Job	Spool File Name	Size (KB)
QGPL	QPRINT	2021/05/20 17:07:07.814748	1	PDF	Excel	TAFORD	331903/TAFORD/QPADEV0005	QSYSRPT	28
		2021/05/20 14:29:33.428149	1	PDF	Excel	HBEDOYA	331905/HBEDOYA/EMPPFL1	EMPPFL1	28
		2021/05/20 14:26:37.648023	1	PDF	Excel	HBEDOYA	331904/HBEDOYA/EMPPFL1	EMPPFL1	28
		2021/05/20 14:19:04.389891	1	PDF	Excel	HBEDOYA	331900/HBEDOYA/EMPPFL1	EMPPFL1	28
		2021/05/20 14:18:32.886295	1	PDF	Excel	HBEDOYA	331899/HBEDOYA/EMPPFL1	EMPPFL1	28
		2021/05/20 14:14:48.878751	1	PDF	Excel	HBEDOYA	331898/HBEDOYA/EMPPFL1	EMPPFL1	28
		2021/05/20 14:13:50.115814	1	PDF	Excel	HBEDOYA	331897/HBEDOYA/EMPPFL1	EMPPFL1	38
		2021/05/20 14:08:22.214465	1	PDF	Excel	HBEDOYA	331896/HBEDOYA/EMPPFL1	EMPPFL1	28
		2021/05/20 13:58:30.773874	1	PDF	Excel	HBEDOYA	331895/HBEDOYA/EMPPFL1	EMPPFL1	28
		2021/05/20 13:48:47.862146	1	PDF	Excel	HBEDOYA	331888/HBEDOYA/EMPPFL1	EMPPFL1	28
		2021/05/20 13:43:57.827127	30	PDF	Excel	HBEDOYA	298824/HBEDOYA/QPRTJOB	EMPPFL1	38
		2021/05/20 13:03:15.283010	1	PDF	Excel	MACKD	331884/MACKD/MACKD	QPQPRFIL	38
		2021/05/20 12:59:07.800530	3	PDF	Excel	MACKD	331822/MACKD/QPADEV0004	QPQPRFIL	38
		2021/05/20 12:58:17.813774	1	PDF	Excel	MACKD	331883/MACKD/MACKD	QPQPRFIL	38
		2021/05/20 12:41:44.814265	2	PDF	Excel	MACKD		XPRTF	28
		2021/05/20 12:41:44.593934	1	PDF	Excel	MACKD		XPRTF	38
		2021/05/20 12:34:20.829726	2	PDF	Excel	MACKD		XPRTF	60
		2021/05/20 12:34:20.581143	1	PDF	Excel	MACKD		XPRTF	124
		2021/05/20 11:53:08.565362	1	PDF	Excel	MACKD	331847/MACKD/MACKD	QPQPRFIL	28
		2021/05/20 11:51:05.152252	2	PDF	Excel	MACKD	331822/MACKD/QPADEV0004	QPQPRFIL	1,348
		2021/05/20 11:48:29.304746	1	PDF	Excel	MACKD	331844/MACKD/MACKD	QPQPRFIL	292
		2021/05/20 11:32:17.563524	1	PDF	Excel	HBEDOYA	331843/HBEDOYA/EMPPFL1	EMPPFL1	38
		2021/05/20 11:18:55.392363	1	PDF	Excel	MACKD	331834/MACKD/MACKD	QPQPRFIL	292
		2021/05/20 11:18:18.826792	1	PDF	Excel	MACKD	331833/MACKD/MACKD	QPQPRFIL	28
		2021/05/20 11:18:02.490037	29	PDF	Excel	HBEDOYA	298824/HBEDOYA/QPRTJOB	EMPPFL1	38

Click on Excel Link

File Home Insert Draw Page Layout Formulas Data Review

Paste

TREBUCHET MS 9 A^ A^

B I U

Clipboard Font Alignment

A1

SPOOLED_DATA

SPOOLED_DATA						
05/20/21 13:03:15						PAGE 1
Order Number	Order Date	Requested Ship Date	Actual Ship Date	Receive Date	Price	Cost
54080	2021-12-18	2022-03-11	2022-03-15	2022-04-12	1,999.00	1,500.00
54130	2021-12-18	2022-03-06	2022-03-21	2022-04-06	1,999.00	1,500.00
28657	2021-12-04	2022-01-24	2022-01-25	2022-02-22	3,999.00	3,700.00
28251	2021-11-28	2022-02-13	2022-02-12	2022-03-12	3,999.00	3,700.00
28390	2021-11-28	2022-01-05	2022-01-06	2022-01-10	4,599.00	4,000.00
28519	2021-11-28	2022-03-01	2022-03-07	2022-03-14	3,999.00	3,700.00
28015	2021-10-17	2021-11-18	2021-11-19	2021-12-25	2,999.00	2,000.00
28045	2021-10-17	2021-12-04	2021-12-01	2021-12-27	3,999.00	3,700.00
37984	2021-10-02	2021-12-30	2022-03-05	2022-03-09	3,999.00	3,700.00
96654	2021-09-28	2021-11-26	2021-12-10	2021-12-22	3,199.00	2,500.00
96731	2021-09-16	2021-11-05	2021-11-12	2021-11-24	3,199.00	2,500.00
96061	2021-09-06	2021-10-08	2021-10-25	2021-11-24	3,999.00	3,700.00
96175	2021-09-06	2021-10-10	2021-10-09	2021-10-12	1,999.00	1,500.00
48580	2021-08-29	2021-10-11	2021-10-20	2021-11-11	3,999.00	3,700.00
38696	2021-08-06	2021-10-10	2021-09-29	2021-10-06	2,599.00	2,300.00
39307	2021-07-31	2021-10-24	2021-11-06	2021-11-25	3,999.00	3,700.00
37891	2021-06-17	2021-08-08	2021-08-23	2021-08-28	3,999.00	3,700.00
37894	2021-06-17	2021-08-04	2021-08-05	2021-08-08	1,999.00	1,500.00
36819	2021-05-23	2021-07-08	2021-07-09	2021-07-14	3,599.00	3,300.00

Create xlsx from spooled file

IBM Has Done Some of the Work For You

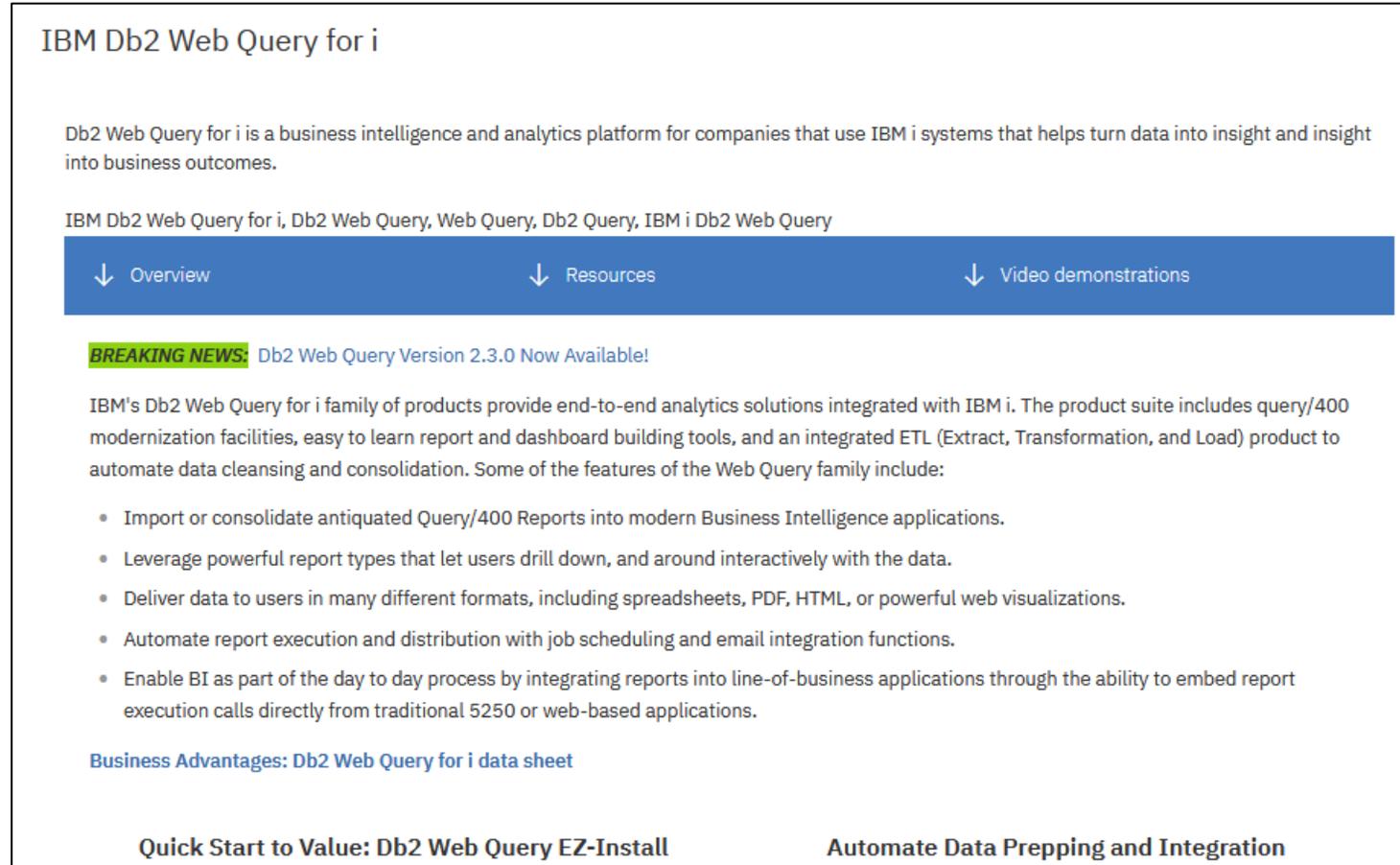
IBM i Anywhere
IBM i Everywhere

- Sample set of reports and dashboards using IBM i “Services” built into the product
 - Documentation on how these were built
- Out of the box Security Centric but also contains many systems/object type monitoring reports
 - Compliance Automation and Reporting Solution Enterprise Edition (multiple systems/LPARs)
 - Sold as a Lab Services solution
 - Single Server Express Edition coming soon
 - <https://www.ibm.com/support/pages/ibm-i-security#cart>



Where to Go For MORE Information on 2.3.0

- Db2 Web Query for i main website
 - <http://ibm.biz/db2webqueryi>
- New Features Guide available on the Db2 Web Query WIKI
 - <http://ibm.biz/db2wqwiki> take the DOCUMENTATION link
- Product Manual also on the wiki
 - <http://ibm.biz/db2wqwiki> take the DOCUMENTATION link
- Doug Mack blog posts
 - [Db2webqueryi.blogspot.com](http://db2webqueryi.blogspot.com)
- EZ-Install Test Drive and InfoAssist Tutorials
 - Included in the EZ-Install package
- EZ-Report
 - <http://ibm.biz/db2wq-ezreport>



IBM Db2 Web Query for i

Db2 Web Query for i is a business intelligence and analytics platform for companies that use IBM i systems that helps turn data into insight and insight into business outcomes.

IBM Db2 Web Query for i, Db2 Web Query, Web Query, Db2 Query, IBM i Db2 Web Query

↓ Overview ↓ Resources ↓ Video demonstrations

BREAKING NEWS: Db2 Web Query Version 2.3.0 Now Available!

IBM's Db2 Web Query for i family of products provide end-to-end analytics solutions integrated with IBM i. The product suite includes query/400 modernization facilities, easy to learn report and dashboard building tools, and an integrated ETL (Extract, Transformation, and Load) product to automate data cleansing and consolidation. Some of the features of the Web Query family include:

- Import or consolidate antiquated Query/400 Reports into modern Business Intelligence applications.
- Leverage powerful report types that let users drill down, and around interactively with the data.
- Deliver data to users in many different formats, including spreadsheets, PDF, HTML, or powerful web visualizations.
- Automate report execution and distribution with job scheduling and email integration functions.
- Enable BI as part of the day to day process by integrating reports into line-of-business applications through the ability to embed report execution calls directly from traditional 5250 or web-based applications.

[Business Advantages: Db2 Web Query for i data sheet](#)

Quick Start to Value: Db2 Web Query EZ-Install Automate Data Prepping and Integration

THANK YOU!

