Article <u>Robert Cemper</u> · Jan 2, 2022 3m read

DB Migration using SQLgateway

Thanks to <u>@Yuri Marx</u> we have seen a very nice example for <u>DB migration from Postgres to IRIS</u>. My personal problem is the use of DBeaver as a migration tool. Especially as one of the strengths of IRIS (and also Caché) before is the availability of the SQLgateways that allow access to any external Db as long as for them an access usinig JDBC or ODBC is available. So I extended the package to demonstrate this.

It is a classic OEX package with a complete Docker. The SQLgateway is installed during Docker build and the required jdbcdriver for Linux is included in this repo In order to make this demo faster, the size of tables to migrate have been shrunk a bit.

How to test

All migration actions can be executed directly from SMP.

1. Verify the gateway connection in SMP> Administration> Configuration >Connectivity >SqlGatewayConfiguration

Welcome, _SYST	rem "	•• 🔲 🗏				
A Hama	Configuration		System Configuration		ECP Settings	G
(II) Home	Security		Ocnnectivity		Shadow Server Settings	c
	Licensing		Mirror Settings		SQL Gateway Connections	с
System Administration	Encryption		Database Backup	>	External Language Pervera	nia item

To test Connection click edit

SQL Gateway Connections

Object/SQL Gateway connections provide a way to defined Gateway Connections are shown below:

Filter:			Pa	ge size: (20 V Items found: 1
Connection Name	DSN	User			
postgres		postgres	Edit	Delete	
			[Click to	edit gateway connection

and Test Connection

SQL Gateway Connection

Use the form below to edit a gateway connection:

Type of connection:	JDBC
Connection name:	postgres
User:	postgres
Password:	•••••
Driver name:	org.postgresql.Driver
URL:	jdbc:postgresql://postgres:5432/
Class path:	/opt/irisapp/jdbc/postgresql-42.3.1.jar (May be a comma separated list if multiple jar files are required.)
Properties:	
Do not use delimited identifiers by default:	
Use COALESCE:	
Use NVL() instead of IFNULL():	
Conversion in composite Row IDs:	 Do not convert non-character values Use CAST as VARCHAR Use CAST as CHAR Use {fn convert}
Connection successful.	Test Connection Save Close

- verify Connection successful

- Be patient at this point. Postgres Containers sometimes take quite some time to talk to you.

- Wait a little bit, reload the page in browser and try the test again.

2.

Identifying the source tables. In SMP > Change to Namespace USER then step to System > SQL

SMP >Explorers >SQL >Wizards > Data Migration

Filter	applies to All	× c «	Wizards » Actions » Open Table Tools » Documentation »
System Schema		*	Data Import
> <u>Tables</u>			Data Export Cute Query Browse SQL Statements
> <u>Views</u>			Data Migration In Show History Query Builder Display Mode - Max 1000 more
> Procedures			Link Tab Migrate class definition and data from other systems to this system.
> Cached Queries			Link Procedure

3. Set required import parameters

Data Migration Wizard (Namespace USER)

The Data Migration Wizard will help you copy SQL table definitions and data by usir

Select a destination namespace:	USER V	
Schema filter:	Enter a full or partial name	Table filte
	A percent sign (%) represents any s	equence of zero
Table type:	TABLE 🗸	
Select a SQL Gateway connection:	postgres 🗸	
Schema:	public 🗸	
Tables:	Select One or More city country order_status product sale status_name store users	



- Destination Namespace
- Type = TABLE
- Gateway = postgres >>> now the first connection is established and you select
- Schema = public
- Tables to migrate = all

4.

Identify target but change schema to be OEX compatible from public to dcpublic

Data Migration Wizard (Namespace USER)

		Realast all	Contrast all
city	TABLE	2	8
country	TABLE		2
order_status	TABLE		2
product	TABLE	2	22
sale	TABLE		2
status_name	TABLE	2	2
store	TABLE		2
users	TABLE		2
	country order_status product sale status_name store users	country TABLE order_status TABLE product TABLE sale TABLE slatus_name TABLE store TABLE users TABLE	country TABLE 2 crotery TABLE 2 product TABLE 2 slafus_name TABLE 2 slafus_name TABLE 2 slafus_name TABLE 2

- don't forget to click change all

- we migrate Definitions and Data so both sides are selected

5.

Skipping special settings we use defaults we start the task in background



This task will be run in the background.

Click here to view the background tasks page.

Close

6.

Now we check the results and see everything was working without Errors

LIOSE	window	5	Last updat	e: 2022-01-02	12:27:0	JZ.645	
Curre	nt backgr	ound t	asks:				
Page s	ize: 0	Max row	ws: 1000	Results: 1 P	age: c	« <mark>1</mark> » ⇒ of 1	
ID	Start Time		Namespace	Task	Status	Details	Error
242	6 2022 - 01-02	12:25:37	USER	Data Migration	Done	postgres public.citypublic.users NoCheck=1 DeferIndices=1 NoTrigger=1 NoJournal=0 DeleteExistingData=1 TuneTable=1	

- You might see errors if tables depend on the content not yet migrated.

- And wait for completions until the status shows Done

7.

We terminate the Migration Wizzard and return to normal table view filtered by $\ensuremath{\mathsf{dc}}^*$

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- All 8 tables are visible and show meaningful columns

8.

Selecting a table and clicking on OpenTable shows reasonable contents

DB Migration using SQLgateway Published on InterSystems Developer Community (https://community.intersystems.com)

Open Table Refresh Close Window

pu	ublic city in namespace USER			Last update: 2022-01-02 12:41:52.574	
4	10	eity id	city name	country id	
1	1	1	City_name	country_id	71
2	2	2	City 2		10
2	2	-	City 2		
4	4		Cau 4		2
-	6		City 4		21
-	6		City 6		-
7	7	7	City 7		54
	8		City 8		8
0	0		City 9		1
10	10	10	City 10		61
11	11	11	City 11		4
12	12	12	City 12		61
13	13	13	City 13		-
14	14	14	City 14		1
15	15	15	City 15	2	9
16	16	16	City 16		70
17	17	17	City 17		-
18	18	18	City 18		6
10	19	10	City 19		1
20	20	20	City 20		3
21	21	21	City 21		31
22	22	22	City 22		5
	23	23	City 23		81
24	24	24	City 24		41
25	25	25	City 25		3
26	26	26	City 26		9
	27	27	City 27		6
28	28	28	City 28		71
29	29	29	City 29		3
30	30	30	City 30		21

O	pen	Table	Refresh	Close Window	1
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dc_public.sale in namespace USER

Last update: 2022-01-02 12:57:18.116

# 1D	sale_id	amount	date_sale	product_id	user_id	store_id
12	a0761ca1-719b-4bc0-9a76-4f2c310e5b65	3249.345	06/05/2019 20:18:06.214735	19	227173	360
2 3	5fe0daea-1fcc-4af7-87a9-389e548cdc6c	9610.107	08/31/2019 08:13:15.672707	262	106284	303
3 4	51fa9ce9-b9a6-48de-ab84-4ea9104d747b	8605.735	01/31/2019 16:30:04.2781	117	25490	422
4 5	f64395f3-6f3e-42c0-9750-13b52d8e9d91	5340.493	05/03/2019 07:50:09.398723	8	60640	363
5 6	d5ee34eb-e6b7-4364-b13e-bab0fc56774e	6803.837	11/15/2019 14:19:24.413511	274	225373	106
6 7	ea4c67ff-6111-49b1-bfdb-27a349e8de2c	8675.357	03/28/2019 07:31:38.920049	234	52221	156
7 8	6ad4b406-6135-4a6e-aabc-c5a93021dc76	7329.581	06/13/2019 09:01:39.499335	163	95381	404
8 9	1d5ec4fa-d78d-4959-8002-8ec32bb220e3	2608.777	04/08/2019 19:33:23.187622	58	43114	457
9 10	a0be6eb1-5e7f-48b0-82c4-987a3bb2cea3	2244.691	10/22/2019 21:27:37.973024	174	130126	126
10 11	4da07a5f-8706-4f2f-8c7b-1e86ee7ed562	2980.329	05/25/2019 17:24:58.376043	276	197371	368
11 12	f597cfef-e27c-4d15-82e5-eff923e4fe56	5321.619	08/02/2019 18:19:53.805683	89	114176	498
12 13	e1775f83-40cf-493e-ad97-c31569b7a3de	2141.334	12/27/2019 05:21:23.834163	102	68660	262
13 14	93d7eaac-9f91-429e-aee7-4badf24ad4d3	7774.936	09/19/2019 12:13:15.479316	200	177053	104
14 15	c5c92f0b-f057-4e35-a69e-f40a010fa4f2	5616.166	09/20/2019 22:29:13.846402	56	65308	296
15 16	b7a71959-e6c8-4fd3-b33e-89206cec6f79	7224.649	05/03/2019 20:19:54.467358	196	97730	419
16 17	59b158ed-a3c0-4846-941c-d4ca9d8554cc	3970.118	11/05/2019 08:45:04.906936	237	235906	161
17 18	d0f9dd93-4dcf-4d3e-bc10-84f5f9e07d4b	3233.518	09/07/2019 03:53:03.221553	271	19634	467
18 19	51bec7e8-2402-4e35-9f72-70baaa8c5e76	3444.624	04/10/2019 11:04:22.86936	6	155089	145
19 20	50f415ea-f903-4816-9559-22770e4dda28	9268.943	01/03/2019 14:34:58.248772	140	197052	151
20 21	05f6076f-bfb2-4ae4-97b2-000ade0871e4	137.647	02/14/2019 17:46:34.40058	288	25637	188
21 22	10997c1c-9dc7-40ce-b850-1b354a376f2b	1973.726	11/22/2019 07:26:28.664947	220	94132	478
22 23	41b6bc50-043c-4c39-b22e-8bc02e13f852	2474.278	12/06/2019 05:10:50.654773	16	152178	103
23 24	2466ed9e-18bd-45e4-86dc-31057656de4f	1172.654	11/09/2019 10:20:55.203226	285	20773	257
24 25	51ea7404-3daf-43d5-a076-7fe189e4b4c2	8668.224	09/17/2019 11:13:35.441098	284	38822	343

9.

A look into the related generated Class Definitions confirms the result and successful completion.

Encoder and a second seco

<u>GitHub</u>

<u>#Best Practices</u> <u>#Data Import and Export</u> <u>#Docker</u> <u>#SQL</u> <u>#InterSystems IRIS</u>

Source URL: https://community.intersystems.com/post/db-migration-using-sqlgateway