**Source Systems & Remote Sources**

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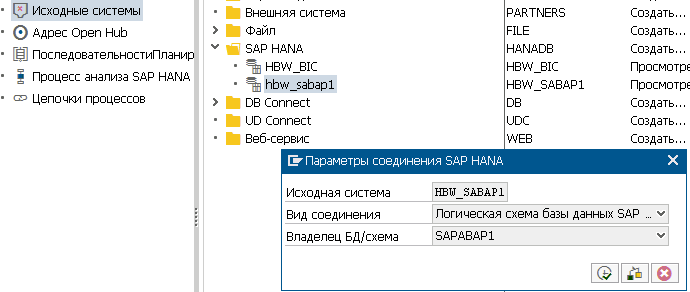
# [Creating an SAP HANA Source System](#Creating_an_SAP_HANA_Source_System)

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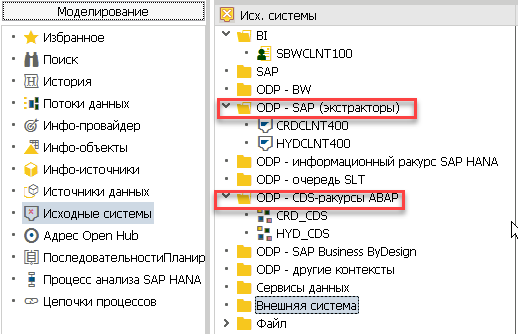
# [Managing Secondary Credentials](#Managing_Secondary_Credentials)

# [*Create Secondary Credentials for a User [Smart Data Access]*](#Create_Secondary_Credentials_for_a_User)



sap blog create Source System SAP HANA

Еще есть



**Data Provision Using Source Systems**

SAP BW∕4HANA provides mechanisms for providing data - *master data* /attributes, texts, hierarchies/ *transaction data*, *metadata* - from various sources.

# Transferring Data with an SAP HANA Source System

The SAP HANA ***source system*** provides central and unified access to sources that are provided using SAP HANA *smart data integration* or SAP HANA *smart data access*. It also allows access to tables over views on the local SAP HANA database.

## ***SAP HANA Smart Data Integration***

With SAP HANA smart data integration, SAP BW∕4HANA provides a means of integrating external data into the SAP BW∕4HANA. Smart data integration allows data from various sources to be accessed in real time or transferred to the SAP BW∕4HANA.

Smart data integration enables real-time data procurement /prəˈkjʊəmənt получение, поставка/, faster data procurement, mass data transfer, and federation. The connection to the external sources takes place using data provisioning adapters. Smart data integration provides adapters for a range of sources and allows custom adapters to be developed using an SDK.

System requirements and prerequisites for SAP HANA smart data integration

* The minimum requirement for SAP HANA is Support Package Stack (SPS) 10. Note, however, that a large number of adapters have been added with SAP HANA SPS 11. For more information, see the Product Availability Matrix for SAP HANA smart data integration.
* The SAP HANA *smart data integration* option is imported to SAP HANA.
* The required data provisioning agents are installed and the data provisioning adapters are configured.
* The required remote sources have been created.

## Use

You can access the data virtually using Open ODS views and CompositeProviders. Data transfer is supported in full mode for all sources, provided the source supports this /generic delta/.

For many data provisioning adapters, real-time replication is supported with the SAP HANA source system.

Related Information

<http://help.sap.com/hana_options_eim>

[Master Guide for SAP HANA Smart Data Integration and SAP HANA Smart Data Quality](http://help.sap.com/saphelp_hana_options_eim/helpdata/en/c7/a3c3f164a74f0db12ebbb7cb346c98/frameset.htm)

[Administration Guide for SAP HANA Smart Data Integration and SAP HANA Smart Data Quality](http://help.sap.com/saphelp_hana_options_eim/helpdata/en/06/756fc260e548ed9f64c439b8649ced/frameset.htm)

[SAP HANA smart data integration and all their patches (SAP HANA SDI) Product Availability Matrix (PAM)](https://help.sap.com/docs/link-disclaimer?site=https%3A%2F%2Fsupport.sap.com%2Fcontent%2Fdam%2Flibrary%2Fssp%2Finfopages%2Fpam-essentials%2FTIP%2FPAM_HANA_SDI_1_0.pdf)

# Creating an SAP HANA Source System

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The SAP HANA source system provides central and unified access to tables and views in the ***local*** SAP HANA database and to sources that are provided using SAP HANA Smart Data Integration and SAP HANA Smart Data Access.

## Prerequisites

The connection types of the SAP HANA source system use the default connection to the SAP HANA database. Therefore, the SAP <SID> user requires the following authorizations

* For connection type *Local SAP HANA Database Schema* - Object privilege *SELECT* on schema or object.
* For connection type *SAP HANA Smart Data Access*
  + Object privilege *CREATE VIRTUAL TABLE*
  + If you want to use real-time replication - Object privilege *CREATE REMOTE SUBSCRIPTION*

## Context

The SAP HANA source system allows various source system configurations that make it possible to access tables or view from database management systems

1. *SAP HANA Smart Data Access*

* For databases that are connected with SAP BW∕4HANA by SAP HANA *Smart Data Access*. When defining the source system, you define which *remote source /database/* and which *schema* to access.
* For databases and other external systems that are connected with SAP BW∕4HANA by SAP HANA *Smart Data Integration*.

1. *Local SAP HANA Database Schema*

* For database tables of views of the SAP BW∕4HANA SAP HANA database.

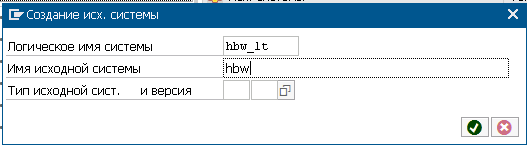
## Procedure

1. You are in the BW Modeling tools. In the Project Explorer view in the Data Sources tree, open the context menu on the folder for source system type SAP HANA and choose  *New  Source System*.

In the editor area, the system opens the SAPGUI interface for creating a source system.

1. In the Create Source System popup screen, enter a *technical name* and a *description*.

[Optional] Specify the content release and version.



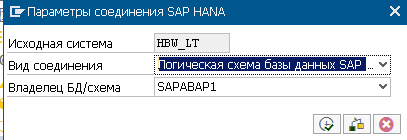
Press https://help.sap.com/doc/107a6e8a38b74ede94c833ca3b7b6f51/1.0.0/en-US/loioc5340ad8f5564cf0aff2a6f12fc5460a_LowRes.png(Continue).

1. In the next popup screen, specify the connection parameters for the SAP HANA source system.

First select the connection type.

Depending on the connection type, the system displays further entry fields for the connection parameters.

1. Specify the required connection parameters.
   * For connection type *Locales SAP HANA Database Schema* - Under Owner/Schema, specify the schema that you want to create the source system for

.

* + For connection type *SAP HANA Smart Data Access* - Under Remote Source, specify the database that is connected with SAP HANA by SAP HANA Smart Data Access.

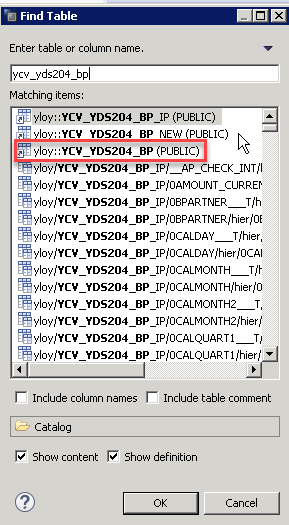
Depending on the remote source and the data provisioning adapter, the system displays the following fields

* *Remote Database* and *Owner/Schema* - for sources whose objects are in the schemas, specify the schema that you want to create the source system for.
* *Path Prefix* - for sources with a hierarchical folder structure, you can select a path for a given folder for which you want to create the source system from the folder structure.

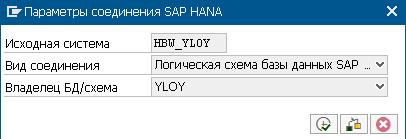
1. Choose https://help.sap.com/doc/107a6e8a38b74ede94c833ca3b7b6f51/1.0.0/en-US/loioecc30c6bbb7148e89d8aabb042ec0b65_LowRes.png(Check) and https://help.sap.com/doc/107a6e8a38b74ede94c833ca3b7b6f51/1.0.0/en-US/loiobcacd745e5a74c0a8c02a1b1d573f976_LowRes.png(Execute).
2. In the context menu of the folder for source system type SAP HANA, choose Refresh.

**Source system для Calculation view**

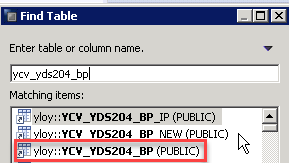
Например – создадим новую Source system для схемы yloy hbw.

ant

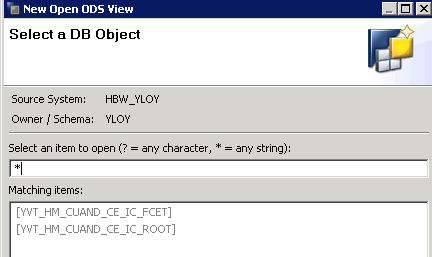
***rsa1***



Пытаемся создать ***Open ODS*** для yloy::ycv\_yds204\_bp



Не находит – есть только



Решение

Open ODS для CalculationView создается через SAP HANA *Smart Data Access*.

Read Calculation View through Open ODS

See

<http://www.hanaexam.com/2019/06/bw4-hana-virtual-master-data-through-sda.html>

Choose Source Type as “Virtual Data using SAP HANA Smart Data Access”

**Create a Remote Source Using the SAP HANA Database Explorers**

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# *ALTER REMOTE SOURCE Statement (Access Control)*

<https://help.sap.com/docs/hana-cloud-database/sap-hana-cloud-sap-hana-database-sql-reference-guide/alter-remote-source-statement-access-control?locale=en-US>

# *Creating Remote Sources (Smart Data Access)*

<https://help.sap.com/docs/hana-cloud-database/sap-hana-cloud-sap-hana-database-data-access-guide/creating-remote-sources-smart-data-access?locale=en-US>

CREATE REMOTE SOURCE *HBW\_RT\_E*

ADAPTER hanaodbc

CONFIGURATION 'Driver=libodbcHDB.so;ServerNode=bl-sap-hbw.it.beloil.by:30003;sessionVariable:APPLICATIONUSER=?;linkeddatabase\_mode=optimized'

WITH CREDENTIAL TYPE 'PASSWORD' USING 'user=EKIMENKO;password=xX123458'

# Setting Session Specific Information for Connections

Session specific client information can now be set *for connections to HANA remote sources*.

When creating remote sources, you add syntax to specify the session information

sessionVariable=<session\_variable\_name>=?

When the connection is made via smart data access to the remote source, the ***?*** *is replaced with the value of the variable in the local current session context* and is added to the connection string. This allows values of local session variables to be used to set session variables on the remote HANA system.

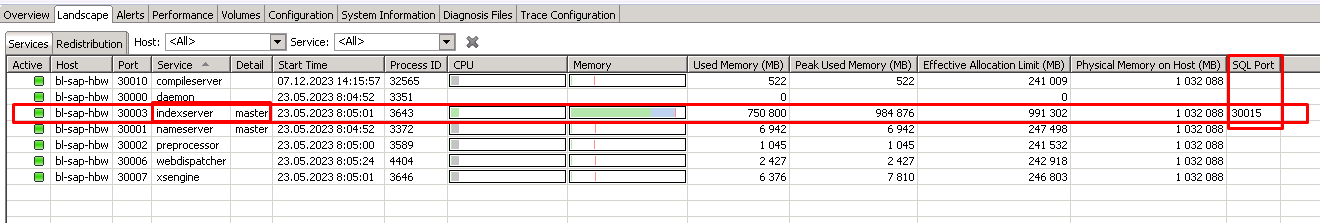
Each connection to the local HANA system has its own session. When a session executes a query using a virtual table, it establishes a connection to the remote HANA system. The value of the variable used to generate the connection string depends on the value of the variable in the local HANA session.

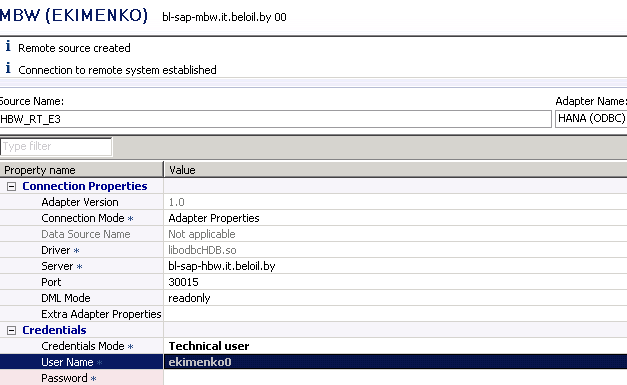
For example, to set the session information on the remote HANA for the variables APPLICATIONUSER and CDS\_CLIENT, if the value of the variables in the local session APPLICATIONUSER is abc and CDS\_CLIENT is 100. When the connection to the remote system is established, the following is added to the connection string: sessionVariable:APPLICATIONUSER=abc; sessionVariable:CDS\_CLIENT=100.

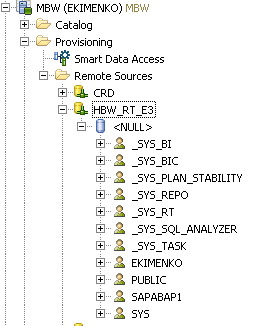
Is your HANA system number 00?

*HANA should be listening to port 3SN15 by default* ⇒ if your SN is not 00 port 30015 is not being used.

Т.е. нужно указывать *SQL порт*



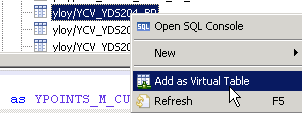


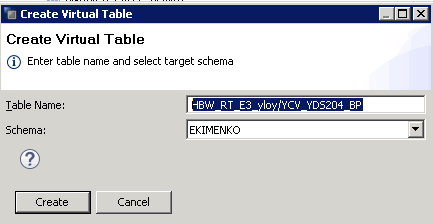


Rem

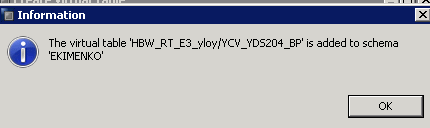
*Calculation View* – в схеме \_SYS\_BIC.

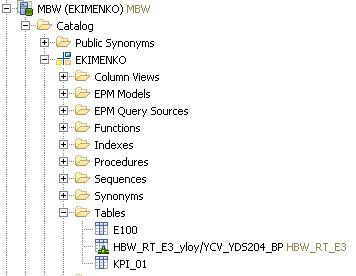
Создаем Virtual Table для CV yloy::YCV\_YDS204\_BP





HBW\_RT\_E3\_yloy/YCV\_YDS204\_BP





Change the Credential Type of a Remote Source

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## Procedure

* 1. Drop the defined credential type if the remote source has one.
  2. ALTER REMOTE SOURCE *<remote\_source\_name>*

DROP CREDENTIAL TYPE '*<credential\_type>*';

The credential types are as follows

* Technical user credential type – *PASSWORD.*
* JWT credential type - *JWT*.
* Kerberos credential type - *KERBEROS*.

1. Assign the new credential type to the remote source

*-- Technical user credential type*

ALTER REMOTE SOURCE *<remote\_source\_name>*

WITH CREDENTIAL TYPE *'PASSWORD*'

USING 'user=*<user\_name>*;password=*<password>*';

*-- JWT credential type*

ALTER REMOTE SOURCE *<remote\_source\_name>* WITH CREDENTIAL TYPE '*JWT*';

*-- Kerberos credential type*

ALTER REMOTE SOURCE *<remote\_source\_name>*

WITH CREDENTIAL TYPE '*KERBEROS*';

Secondary credentials

To use *secondary credentials*, do not specifiy a credential type - secondary credentials must be created for individual users for use with the remote source.

# Managing Secondary Credentials

# <https://help.sap.com/docs/hana-cloud-database/sap-hana-cloud-sap-hana-database-data-access-guide/managing-secondary-credentials>

[Содержание](#Содержание)

When creating a remote source

1. you can define a remote *user name* and *password*, called the *technical user* - all users using the remote source use *the same technical user credentials* to access to the remote database.
2. *If you want to associate different remote credentials with individual users*, then configure the remote source to use *secondary credentials*. With this configuration, users without secondary credentials can't access the remote source.

No privileges are required to manage your own credentials, but the CREDENTIAL ADMIN privilege is required to manage other credentials. *Management of technical user credentials* can be done by the *owner of the remote source*, or any user with the CREATE REMOTE SOURCE or CREDENTIAL ADMIN privilege.

# Create Secondary Credentials for a User [Smart Data Access]

<https://help.sap.com/docs/hana-cloud-database/sap-hana-cloud-sap-hana-database-data-access-guide/create-secondary-credentials-for-user-smart-data-access?locale=en-US&q=Create%20Secondary%20Credentials%20for%20a%20User>

[Содержание](#Содержание)

## Prerequisites

Requires the CREDENTIAL ADMIN privilege to manage other credentials. No privileges are required to manage your own credentials.

## Context

## Though not mandatory, *creating the secondary credentials before creating the remote source* speeds the process. Secondary credentials can only be created using SQL.

## 

## Procedure

In an SQL console window on the local instance, create secondary credentials for each user to access the remote source. *The specified remote user* must exist on the remote source

CREATE CREDENTIAL FOR USER <HANA\_user> COMPONENT *'SAPHANAFEDERATION'*

PURPOSE '<remote\_\_source\_name>' TYPE 'PASSWORD'

USING 'user=<remote\_user\_name>;password=<remote\_user\_password>';

## Example

This example creates secondary credentials for *EKIMENKO* to access remote source *HBW\_RT*. *EKIMENKO* is assigned the credentials of *EKIMENKO* on the remote source *HBW\_RT*

CREATE CREDENTIAL FOR USER *EKIMENKO* COMPONENT 'SAPHANAFEDERATION'

PURPOSE *'HBW\_RT'* TYPE 'PASSWORD'

USING 'user=*EKIMENKO*;password=xX123458';

DROP CREDENTIAL FOR USER *EKIMENKO* COMPONENT 'SAPHANAFEDERATION'

PURPOSE *'HBW\_RT'* TYPE 'PASSWORD';

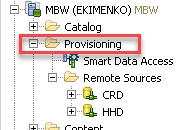
*Sap hana Privileges for CREDENTIALS (SYS)*

### Prerequisites

* A DSN entry exists in the .odbc.ini file.

### Procedure

1. Expand the *~~Catalog~~ Provisioning*.



1. In the context menu of the Remote Sources object, choose *Add Remote Source*.
2. Enter a remote source name.
3. In the Adapter Name dropdown list, select *ODBC* (GENERIC ODBC).
4. Enter the required connection information:

| **Data Source Name** | |
| --- | --- |
| **Property** | **Description** |
| Configuration File | Specify property\_esp.ini |
| Data Source Name | Specifies the DSN as defined in the .odbc.ini file. |
| DML Mode | Specifies if the remote source is readwrite (default) or readonly. |

1. Specify the credentials mode for the remote source.
   1. *Technical user* – Specify a valid user and password to connect to the remote source. All connections to the remote source share the same credential for the remote source.
   2. *Secondary credentials* – Create one credential per user per remote source. At least one secondary credential should exist before you create the remote source. If no secondary credentials exist, the credential mode is set to None, but once a secondary credential is created, the credential mode automatically switches to secondary credentials.
2. Choose *Create*.

См.

<https://help.sap.com/docs/SAP_HANA_PLATFORM/6b94445c94ae495c83a19646e7c3fd56/6d16394bc4c14f83bec739857e3212a9.html>

<https://help.sap.com/docs/SAP_HANA_PLATFORM/6b94445c94ae495c83a19646e7c3fd56/6d16394bc4c14f83bec739857e3212a9.html>

privilege credentials to Create a Remote Source

from

<https://help.sap.com/docs/HANA_SERVICE_CF/6a504812672d48ba865f4f4b268a881e/20fc276e8f22423fb6eba66f03f541e1.html>

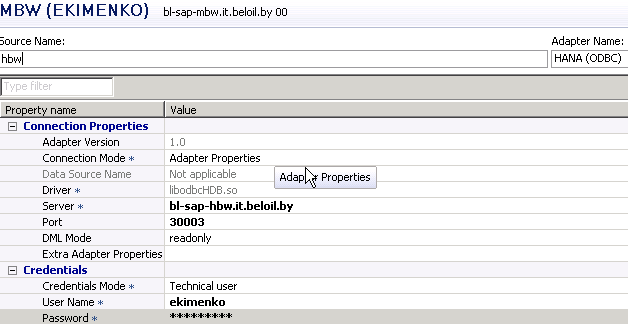
Creating a ***remote source*** requires the CREATE REMOTE SOURCE system privilege.

Creating ***virtual tables*** requires the CREATE VIRTUAL TABLE object level privilege on the remote source.

GRANT CREATE REMOTE SOURCE TO EKIMENKO

GRANT CREATE VIRTUAL TABLE, DROP ON REMOTE SOURCE <source\_name> TO EKIMENKO

**Create Remote source**



# Connection Types for the SAP HANA Source System

Connection types are available for the SAP HANA database that you can use to access source objects in a schema of the local SAP HANA database or objects of a source connected using SAP HANA smart data access.

## Local SAP HANA Database Schema

Choose this option if you want to use a specific schema in the local SAP HANA database as a source system, that is, if you want to access tables or views of the SAP HANA schema defined in the source system configuration.

You specify the schema as a connection parameter.

Tip You can also create a source system of this connection type directly when creating an Open ODS view.

## SAP HANA Smart Data Access

Choose this option if you want to use a data source as a source system that is connected to the SAP HANA database on which the SAP BW∕4HANA system is running by means of smart data access.

With this connection type, you can also use sources provided by SAP HANA smart data integration. The connection to the external sources takes place using data provisioning adapters.

As connection parameters, you specify the remote source that connects the source to SAP HANA as well as an area of the source for which access is available via the source system. Depending on the remote source, and therefore, on the adapter, the area is specified either by specifying the remote database and an owner or schema, or, if the source has a hierarchical folder structure instead of schemas, using a path prefix.

Tip You can also create a source system of this connection type directly when creating an Open ODS view.

# Path Prefix and Suffix

For connection type SAP HANA Smart Data Access, there are remote sources that provide a hierarchical folder structure instead of a valid database/schema combination in their metadata.

The path is the link for the folder names from the root node to the source object in the structure. The path excludes the remote source (root node) and the source object. It can be divided into a path prefix and a path suffix. The path prefix is the part of the path that is defined in the source system. The path suffix is the remaining part of the path, excluding the source object, which is defined in the DataSource. Both the path prefix and the path suffix can be empty.

The path prefix is a local system setting. It is therefore possible to define a path prefix for the development system that differs from that of the quality system or production system. In addition, the overview of the objects that can be selected is improved by restricting it to a part of the folder structure.

See

<https://www.just-bi.nl/virtual-bw-open-ods-view/>

# Flexible Data Modelling with SAP S/4HANA and SAP BW/4HANA

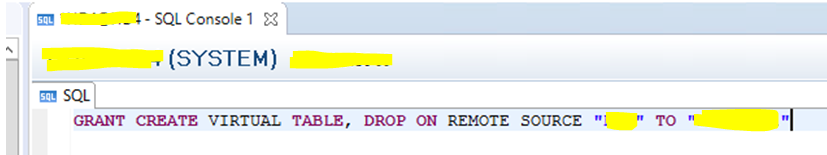
<https://nttdata-solutions.com/uk/blog/flexible-data-modelling-with-sap-s-4hana-and-sap-bw-4hana/>

Under the bonnet, BW/4HANA uses a local virtual table (on the BW database) that points to a persistent database table in the source system, in this case in S/4HANA. There are two ways to create these virtual tables in BW/4HANA:

1. Manually in HANA Studio using the HANA data modelling perspective. Using this technique, the virtual table is manually created on the HANA database in BW/4HANA.  
2. Alternatively, you let BW/4HANA automatically generate the virtual table, when it generates the Open ODS View object in the BW application.

We used option two because it is less effort and all modelling is conveniently done in one place, in the BW application.

Please note, that for this option to work, the SAP BW <SID>-user needs to have the required HANA privileges, which can be granted using the following command:



How to build a Custom Hierarchy in ABAP CDS views

<https://community.sap.com/t5/enterprise-resource-planning-blogs-by-sap/how-to-build-a-custom-hierarchy-in-abap-cds-views/ba-p/13344338>

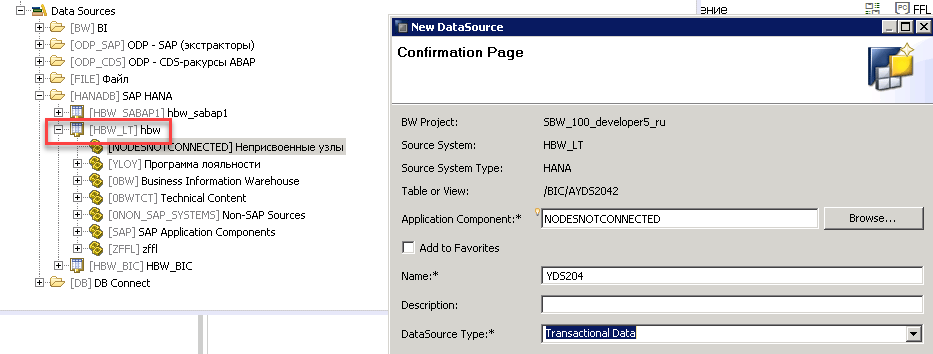
## Use SAP HANA Virtual Table connection to external data sources

<https://www.programmerall.com/article/38962247291/>

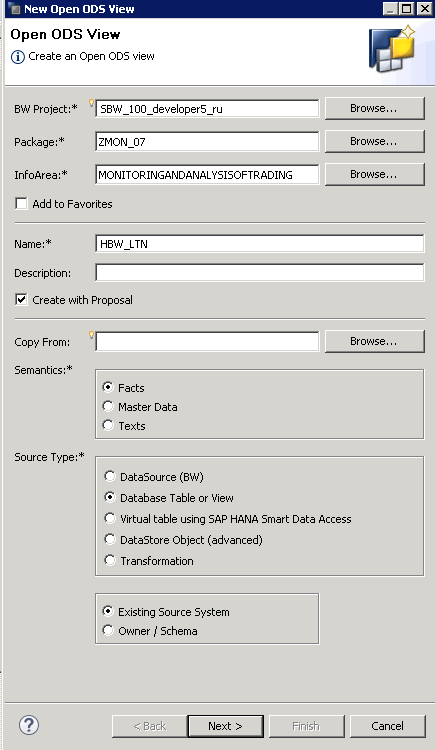
Creation of HANA Virtual Tables in HANA database Instance

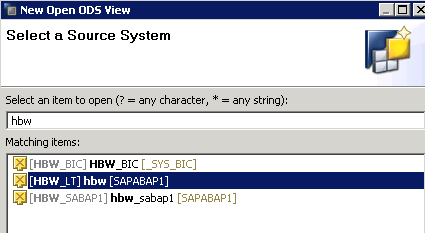
<https://sapspaces.com/creation-of-hana-virtual-tables-in-hana-database-instance-and-connecting-to-hana-iq-store-using-remote-source/>

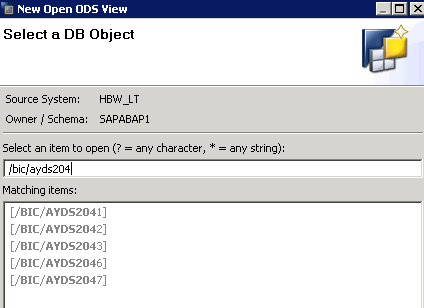
**Создание Data Source на основе Source System**

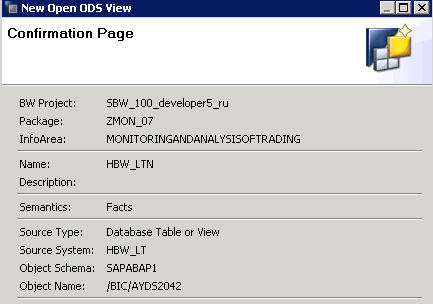


**Доступ к таблице через Open ODS**









SELECT TOP 1000 \* FROM "SAPABAP1"."0BW:BIA:HBW\_LTN"

select

"/BIC/YCHCKDATE", sum("/BIC/YPOINTS") as "/BIC/YPOINTS", sum("/BIC/YPOINTS\_M") as "/BIC/YPOINTS\_M",

"/BIC/YPT\_CURR", "/BIC/YTXN\_TYPE", "/BIC/YPT\_TYPE", "/BIC/YPROCTYPE"

from(

select

ds\_207."/BIC/YCHCKDATE", sum(ds\_207."/BIC/YPOINTS") as "/BIC/YPOINTS", sum(ds\_207."/BIC/YPOINTS\_M") as "/BIC/YPOINTS\_M",

ds\_207."/BIC/YPT\_CURR", ds\_207."/BIC/YTXN\_TYPE", ds\_207."/BIC/YPT\_TYPE",

ds\_207.calyear, ds\_207.calmonth, ds\_207.calday, ds\_207.calmonth2,

sum(ds\_204."/BIC/BSSLS000") as "/BIC/BSSLS000", ds\_204.currency, ds\_204."/BIC/BEMIT000", ds\_204."/BIC/BAZS0000", ds\_204."/BIC/BPAYT000",

pt."/BIC/BPAYTGRP",

ds\_204."/BIC/YPROCTYPE"

from "SAPABAP1"."/BIC/AYDS2072" as ds\_207

left outer join "SAPABAP1"."/BIC/AYDS2062" as ds\_206

on ds\_207."/BIC/YCARDGUID" = ds\_206."/BIC/YCARDGUID"

--yds204

left outer join

(select "2FLT\_YDS204-YACT\_GUID\_KEY" as "/BIC/YACT\_GUID", "2FLT\_YDS204-YACT\_POS\_KEY" as "/BIC/YACT\_POS",

"2FLT\_YDS204-YPROCTYPE\_KEY" as "/BIC/YPROCTYPE", "2FLT\_YDS204-BCHKNUM0\_KEY" as "/BIC/BCHKNUM0",

"2FLT\_YDS204-BAZS0000\_KEY" as "/BIC/BAZS0000", "2FLT\_YDS204-BEMIT000\_KEY" as "/BIC/BEMIT000",

"2FLT\_YDS204-BPAYT000\_KEY" as "/BIC/BPAYT000", "2FLT\_YDS204-CURRENCY\_KEY" as currency,

sum("BSSLS000") as "/BIC/BSSLS000"

--from "SAPABAP1"."/BIC/AYDS2042"

from "SAPABAP1"."0BW:BIA:LT\_YDS204"

where ("2FLT\_YDS204-CALDAY\_KEY" in ('20240313'))

group by "2FLT\_YDS204-YACT\_GUID\_KEY", "2FLT\_YDS204-YACT\_POS\_KEY",

"2FLT\_YDS204-YPROCTYPE\_KEY", "2FLT\_YDS204-BCHKNUM0\_KEY",

"2FLT\_YDS204-BAZS0000\_KEY", "2FLT\_YDS204-BEMIT000\_KEY",

"2FLT\_YDS204-BPAYT000\_KEY", "2FLT\_YDS204-CURRENCY\_KEY"

) as ds\_204

on ds\_204."/BIC/YACT\_GUID" = ds\_207."/BIC/YACT\_GUID" and ds\_204."/BIC/YACT\_POS" = ds\_207."/BIC/YACT\_POS"

left outer join "SAPABAP1"."/BIC/PBPAYT000" as pt

on pt."/BIC/BPAYT000" = ds\_204."/BIC/BPAYT000"

where ds\_207."/BIC/YPOINTS" > 0 and

ds\_207."/BIC/YCHCKDATE" in ('20240313') and

length(ds\_204."/BIC/YPROCTYPE") > 0

group by

ds\_207."/BIC/YCHCKDATE", ds\_207."/BIC/YPT\_CURR", ds\_207."/BIC/YTXN\_TYPE", ds\_207."/BIC/YPT\_TYPE",

ds\_207.calyear, ds\_207.calmonth, ds\_207.calday, ds\_207.calmonth2,

ds\_204."/BIC/BEMIT000", ds\_204."/BIC/BAZS0000", ds\_204.currency, ds\_204."/BIC/BPAYT000", pt."/BIC/BPAYTGRP",

ds\_204."/BIC/YPROCTYPE"

) as nm

group by

"/BIC/YCHCKDATE",

"/BIC/YPT\_CURR", "/BIC/YTXN\_TYPE", "/BIC/YPT\_TYPE", "/BIC/YPROCTYPE"