

S03 - Native HANA Modeling - Part 2

SAP Native HANA Modeling Fundamentals	<ol style="list-style-type: none">1. SDA Remote Source & HANA Virtual Tables - Done2. HANA Calculation Views<ol style="list-style-type: none">1. Create Material Dim CV2. Create Plant Dim CV3. Create table function based Plant Dim CV4. Create Sales Fact CV (Cube)5. Renaming the Plant CV to Plant CV_DIM6. Copy a CV from one Pkg to another7. Move a CV from one Pkg to another8. Create Cube with Star Join3. HANA DB Procedures4. HANA XS Job scheduler Config5. HANA Node types and purpose	8th Aug: 8:30 AM - 10:30 AM
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Q & A Session

Shakthi:

How to make different tables like MARA available at SAPHANADB schema to use them further?	Native HANA Modeling	02-Aug-20
Any reason for the first projection to not have the filters in CV? Can we change the default Projection with the projection with Filter?	Native HANA Modeling	02-Aug-20
When do we use 'Derived From Table' and 'Static List' option in Input Parameters?	Native HANA Modeling	02-Aug-20

Vijay:

CDS View based extractor's : Should we make a copy of the available extractor or we can use as-is provided by SAP? If we are going to use as-is, what if SAP changes the code. (We usually do the copy of HANA Live or VDM's built for operational reporting - atleast for private Views)

Via Extn CDS Views

Tobias

What is a tenant? What is the difference between a tenant and a schema?

Shikha

What is SQL view? And how is it different from CDS view? What are the Use cases of SQL view vs CDS view?

DDL Source (Code) - File (DDIC Object)

-> CDS View entity (not a DB object and not a DDIC object) - 3bubbles symbol

-> SQL View (DB Object) - DB View

Diff b/w Full Outer Join & Union

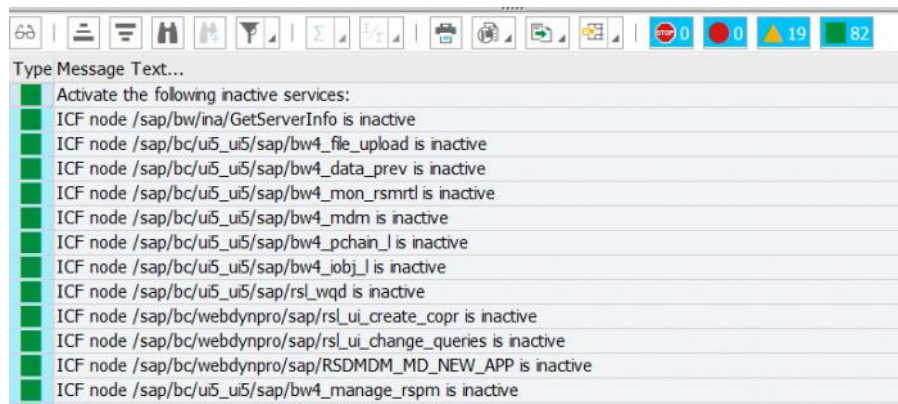
Thumb Rule	Join is used to combine columns from different tables, whereas union is used to combine rows.
Full Outer Join	<p>The diagram shows two input tables, Table A and Table B, each with 5 columns and 6 rows. Table A has columns of varying shades of blue and purple. Table B has columns of orange, yellow, and green. The result of a Full Outer Join is a table with 10 columns (all columns from both tables) and 12 rows (all rows from both tables). The result table shows the columns from Table A on the left and columns from Table B on the right, with light blue squares indicating missing values where data from one table is not present in the other.</p>
Union	<p>The diagram shows two input tables, Table A and Table B, each with 5 columns and 6 rows. The result of a Union operation is a table with 5 columns and 12 rows, where the rows of Table A are stacked on top of the rows of Table B. The columns are aligned, and light blue squares indicate missing values where a column from one table does not have a corresponding value in a row from the other table.</p>

How to activate the BW/4HANA Cockpit

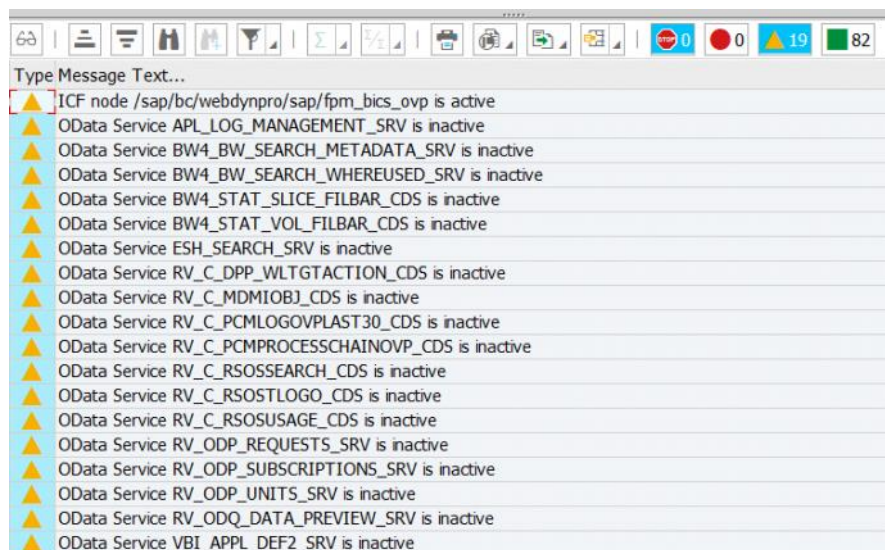
We have to first run a program to check which services are inactive:

PGM BW4_UI5_IFC_CONSISTENCY

Results example:



Check the warnings (Yellow): These services are inactive in your system.
We need to activate them via SICF tcode.



Example of activating service via SICF:

Provide the path and service name: the service will be greyed out since it's inactive

Define Services

Create Host/Service System Monitor Active

Filter Details

Virtual Host: Service Path:

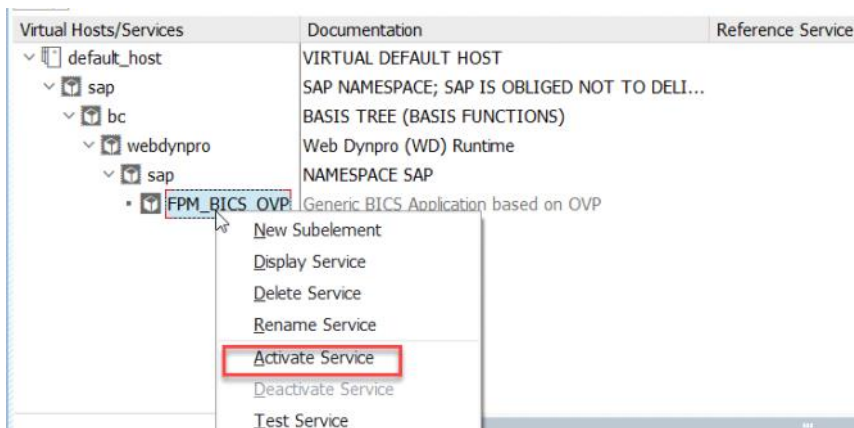
ServiceName:

Description:

Lang.: Reference:

Virtual Hosts/Services	Documentation	Reference Service
default_host	VIRTUAL DEFAULT HOST	
sap	SAP NAMESPACE; SAP IS OBLIGED NOT TO DELI...	
bc	BASIS TREE (BASIS FUNCTIONS)	
webdynpro	Web Dynpro (WD) Runtime	
sap	NAMESPACE SAP	
FPM_BICS_OVP	Generic BICS Application based on OVP	

From the context menu (right click), select 'Activate service':



Once all services are activated, run the consistency check again and this time it should provide a message - 'All services are active' :

ABAP Editor: Initial Screen

Debugging

Program:

Subobjects

- ☒ Source Code
- ☐ Variants
- ☐ Attributes
- ☐ Text elements
- ☐ Documentation

Performance Assistant

All services are active!

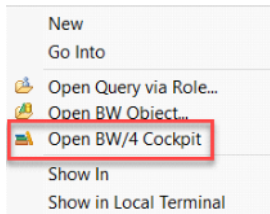
Message no. BW4_UI5_TOOLS001

All services are active!

Now you need to log off (Close Project) and log back in (Open project and double click to login), for the change to take effect.

Now, we have 2 ways to verify:

1. From the context menu of the project, you should get an option to open the 'BW/4HANA Cockpit':



2. You can also click on the option on the top menu bar:



This option will ask you choose the project and it'll list only those projects (connections) which has all services activated.

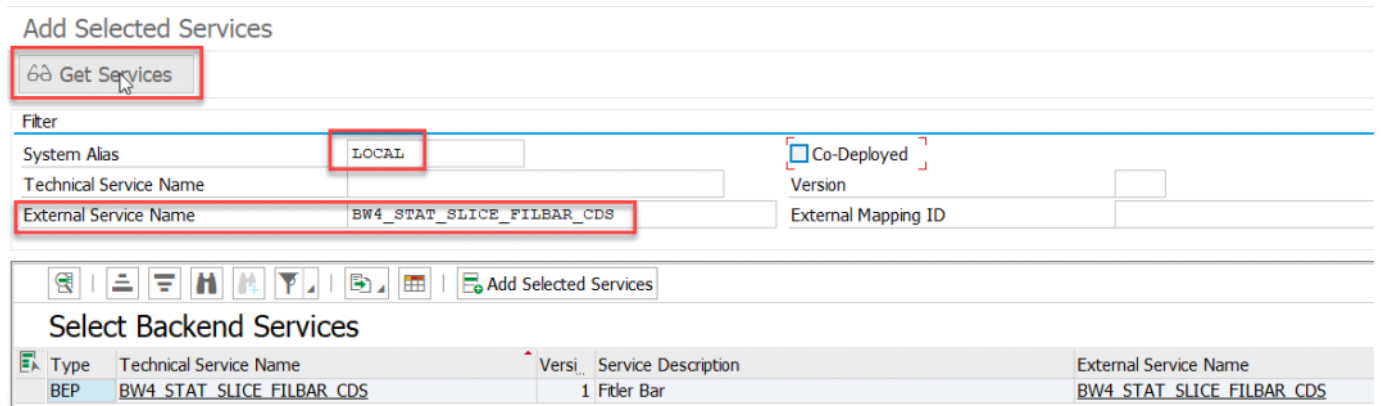
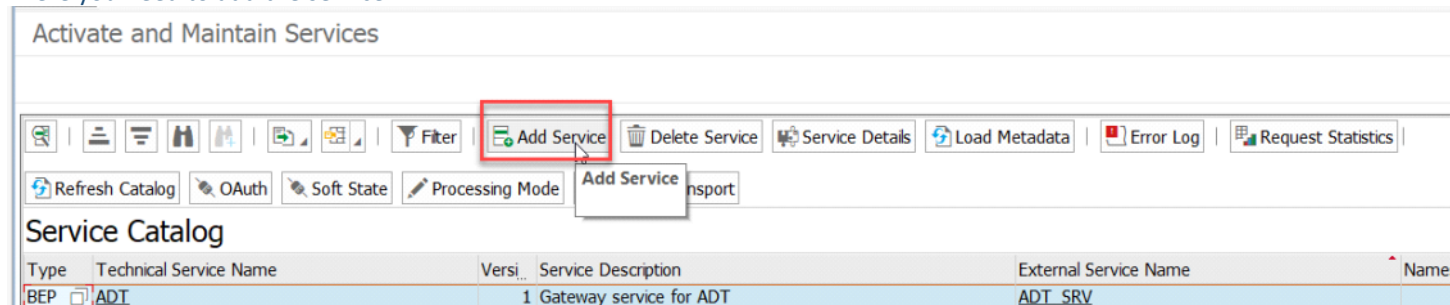
Both option should now be successfully launching the BW/4HANA Cockpit.



If you have any Odata service missing then you need to add that service via a different path:

SPRO->SAP Gateway->Odata Channel->Administration->General Settings->Activate and Maintain Services

There you need to add the service:



Once you click on the service name listed, you need to assign package and then click ok...the message that service is successfully added, will be displayed.

Voila!...this is how you activate the Odata services and make that beautiful BW/4H Cockpit work!

Add Service

Service	
Technical Service Name	ZBW4_STAT_SLICE_FILBAR_CDS
Service Version	1
Description	Fitler Bar
External Service Name	BW4_STAT_SLICE_FILBAR_CDS
Namespace	
External Mapping ID	
External Data Source Type	C

Information

Model

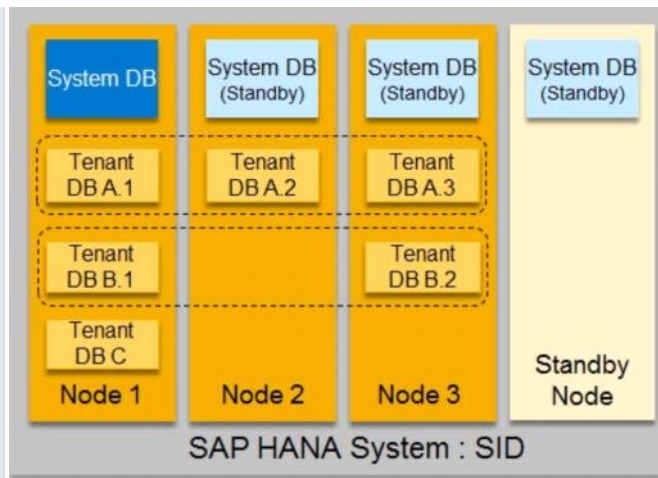
Techr

Model

Service 'BW4_STAT_SLICE_FILBAR_CDS' was created and its metadata was loaded succesfully.

Database Tenant

Definition	<p>SAP HANA supports multiple isolated databases in a single SAP HANA system. These are referred to as tenant databases.</p> <p>An SAP HANA system is capable of containing more than one tenant database.</p> <p>A system always has exactly one system database, used for central system administration, and any number of tenant databases (including zero).</p> <p>With SPS09, SAP HANA added support for multiple tenant databases in one SAP HANA system for production use. We call this feature, “Multitenant database containers”.</p>
Pictorial Depiction	<div><p>The top diagram shows a 'SAP HANA Node' within a 'SAP HANA System : SID'. The node contains a 'System DB' and three 'SAP HANA Tenant DB' (A, B, and C).</p><p>The bottom diagram shows the 'SAP HANA Host' architecture. At the top are 'App X' and 'App Y'. Below them is the 'SAP HANA System' layer, which contains a 'System Database' and two 'Tenant Database's. This system layer sits on 'OS & Hardware', which in turn sits on 'Storage'.</p></div> <div><p>One Schema One SAP HANA System</p><p>Multiple Schemas One SAP HANA System</p><p>Multiple SAP HANA Systems on one SAP HANA virtualized HW appliance (e.g., VMware)</p><p>Multiple tenant databases One SAP HANA System</p><p>This section compares four database architectures. The first three are labeled 'Prior to SPS09' and the fourth is labeled 'With SPS09 Multitenant database containers feature'.</p><ul style="list-style-type: none">One Schema, One SAP HANA System: An 'App' connects to a 'Schema' within a 'Database' in a 'SAP HANA System', which runs on 'OS' and 'HW'.Multiple Schemas, One SAP HANA System: Two 'Apps' ('App X' and 'App Y') connect to 'Schema X' and 'Schema Y' respectively, both within a single 'Database' in a 'SAP HANA System' on 'OS' and 'HW'.Multiple SAP HANA Systems on one SAP HANA virtualized HW appliance (e.g., VMware): Two 'Apps' connect to 'Schema X' and 'Schema Y' in separate 'Databases' and 'SAP HANA Systems'. These systems run on 'OS' and are managed by a 'Hypervisor' on 'HW'.Multiple tenant databases One SAP HANA System: Two 'Apps' connect to 'Schema X' and 'Schema Y' in separate 'Tenant DB's within a single 'SAP HANA System' on 'OS' and 'HW'.</div>
Usage	<p>SAP HANA system with multitenant database containers feature can contain multiple tenant databases. All tenant databases in the same system share the same system resources (memory and CPU Cores). However, each tenant database is fully isolated with its own database users, catalog, repository, persistence (data files and log files) and database services so that for example, you can run both SAP Business Suite and SAP Business Warehouse (BW) in one SAP HANA system.</p>
System DB and Tenant DB	<p>You use the system database to create, drop, start, stop tenant databases and perform database administration activities (backup/recovery, system replication) for all tenant databases at once.</p>
Scale Out Scenario	<p>In a scale out scenario, a tenant database can span across multiple SAP HANA nodes</p>



Requirement for Plant Address

- Plant Address is different based on validity.
- Pick the plant address based on current date.
- Current date should be between 'Valid From' & 'Valid To'.
- Date should be restricted based on user provided date not current date.

Input Parameters

Time based join - Temporal Join

T001W-MADT = ADRC.CLIENT

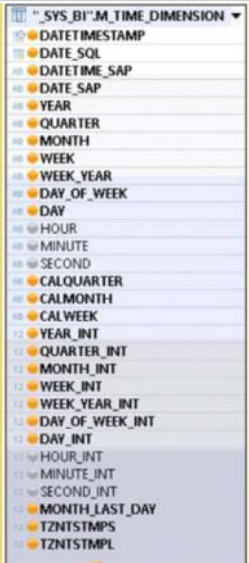
And T001W-ADRNR = ADRC.ADDRNUMBER

And Current Date between ADRC.DATE_FROM and ADRC.DATE_TO

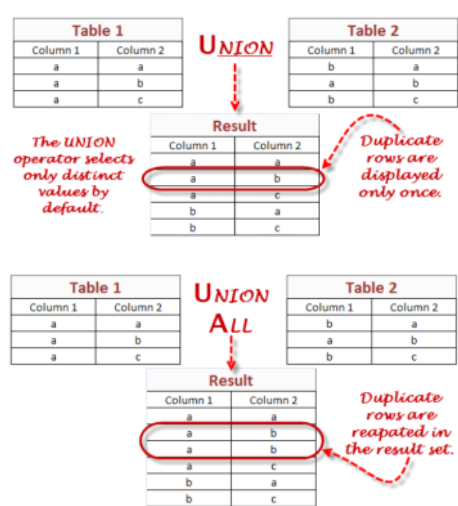
Table Function (Code)

1. Temporal Join in Dimension CVs.
2. Access Row tables
3. Loops

Projection
Selecting subset of column for the list of columns

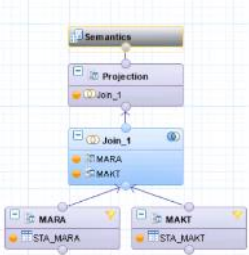


Union
Combining 2 tables with similar structure.
E.g. Actuals + Plan

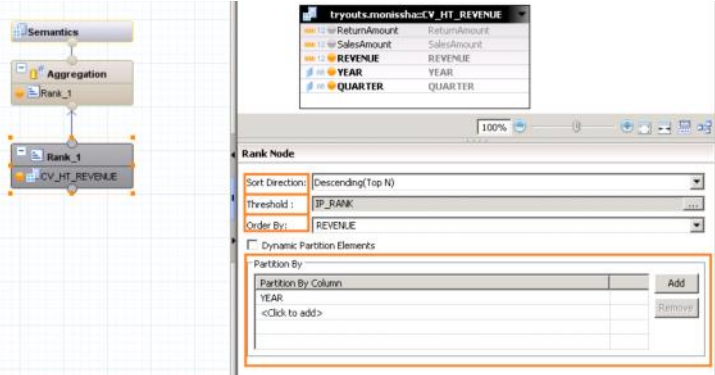


Assignment: HANA UNION Node is a UNION or UNION_ALL?

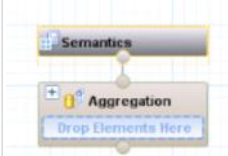
Join
Combining 2 tables with different structure but one Or more common column
E.g. We have ID in one column and we need text from another column.



Rank
Top N records based on a condition.
E.g. Need top 10 customer for each Year based on Sales Qty





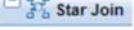



Aggregation Sum the measures (Sum, Min, Max)



Assignment: WHAT HAPPENS IF I Use aggregation node in dimension CV?

In a Nutshell:

Node Type	Use Case
 Projection	To filter data or obtain a subset of required columns from a data source
 Aggregation	To summarize measures by grouping them together by attribute columns values
 Join	To query data from two or more data sources
 Union	To combine the data from two or more data sources
 Star Join	To join attributes to the very last step of a <i>CUBE With Star Join</i> Calculation view
 Rank	To order the data for a set of partition columns and select only the top 3/4/.../n elements

HANA Table functions

What is a table function

- Replacement for Script-based CVs.
- Is a repository object - meaning will be accessible via 'Development Perspective' only.
- Acts like a regular table.
- Can be used in SQL console or HANA CV.
- Allows for complex coding.
- File gets created with extension - '.hdbtablefunction'

The screenshot displays the SAP HANA Studio interface. On the left, the 'Systems' pane shows a tree view of the repository. Under the 'B4H@HNA (BW4USER)' system, the 'TABLE_FUNCTIONS' folder is expanded, and the file 'TF_PLANT_ADDR.hdbtablefunction' is highlighted. The main editor on the right shows the SQL script for this table function. The script is written in SQLScript and defines a function named 'DEBANSHU' that returns a table. The function takes an input parameter 'IP_DATE' of type NVARCHAR(10). The table structure includes columns: MANDT (NVARCHAR(3)), WERKS (NVARCHAR(4)), NAME1 (NVARCHAR(30)), ORTO1 (NVARCHAR(25)), LAND1 (NVARCHAR(3)), ADRNR (NVARCHAR(10)), and ADRNR_NAME1 (NVARCHAR(40)). The script includes a 'LANGUAGE SQLSCRIPT' declaration, 'SQL SECURITY INVOKER', and a 'DEFAULT SCHEMA "DEBANSHU"' statement. The function body begins with a 'BEGIN' statement and a declaration for a local variable 'LV_DATE' of type NVARCHAR(8), which is assigned the value of 'TO_DATE(:IP_DATE)'.

Table Function Scenario

JOIN CONDITION (TEMPORAL JOINS)
MANDT = MANDT
ADRNR = ADDRNUMBER
AND CURRENT_DATE BETWEEN VALID_FROM AND VALID_TO