

S04 - Native HANA Modeling - Part 3

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. Renaming the Plant CV to Plant CV_DIM5. Copy a CV from one Pkg to another6. Move a CV from one Pkg to another7. Create Sales Fact CV (Cube)8. Create Cube with Star Join3. HANA DB Procedures4. HANA XS Job scheduler Config5. HANA Node types and purpose	9th Aug: 8:30 AM - 10:30 AM
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Q & A Session

Vijay	Non-cumulative keyfigure/Models how are we going to work from conversion point from bwon hana to bw4hana
	Is there is a possibility to check lineage in multiple calc. views for finding the table using the specific field/formula/calculation
	How can we leverage the abilities of SAP HANA while we are working with virutal table using SDI/SDA

Lineage

Approach 1	Regular Expression on 'Active_Object' XML. Substring_regexp (FIELD NAME, inPUT_PARAMETER) Build a CV on this.																																								
Approach 2	<table><tr><td>LINEAGE_HIER</td></tr><tr><td>[-] 004_SYSTEM_MANAGEMENT.000_METADATA_MODELS/CV_MMD_LINEAGE</td></tr><tr><td>[-] 004_SYSTEM_MANAGEMENT.000_METADATA_MODELS/CV_MMD_LINEAGE_TF</td></tr><tr><td>[+] 001_CONSOLIDATION.000_SAP.002_TABLE_FUNCTIONS::TF_CV_MMD_LINEAGE</td></tr><tr><td>ACTIVE_OBJECTCROSSREF</td></tr><tr><td>OBJECT_DEPENDENCIES</td></tr></table> <table><tr><td>LINEAGE_HIER</td></tr><tr><td>[-] 003_REPORTING.Finance_Time/CV_REPT_FI_STAFF_UTILIZATION</td></tr><tr><td>[-] 001_CONSOLIDATION.000_SAP.000_MD/CV_CONS_SAP_FI_PC_BUSINESS_FLAT_HIER</td></tr><tr><td>[+] 001_CONSOLIDATION.000_SAP.000_MD/CV_CONS_SAP_FI_PC_FLAT_DESC</td></tr><tr><td>[+] 001_CONSOLIDATION.000_SAP.000_MD/CV_CONS_SAP_HR_EMPLOYEE_DIM</td></tr><tr><td>[-] 002_REPORTING_FOUNDATION.Finance_Time/CV_RPFO_FI_UNION_TIMESTATS_WITH_TIMEREVENUE</td></tr><tr><td>[+] 001_CONSOLIDATION.000_SAP.000_MD/CV_CONS_SAP_CA_FISCAL_KEYDATES_DIM</td></tr><tr><td>[-] 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Approach 3	Table as input All the artifacts where table is being used as Output																																								

How to activate the BW/4HANA Cockpit

2 Methods to activate BW/4 Cockpit

Needs

SICF Services (HTTP)

Odata Services

Profile Parameters

1	Tasklists	SAP_BW4_LAUNCHPAD_SETUP	Tcode: STC01
2	Pgm	BW4_UI5_IFC_CONSISTENCY	

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

PGM	BW4_UI5_IFC_CONSISTENCY
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Results example:

Type	Message Text...
■	Activate the following inactive services:
■	ICF node /sap/bw/ina/GetServerInfo is inactive
■	ICF node /sap/bc/ui5_ui5/sap/bw4_file_upload is inactive
■	ICF node /sap/bc/ui5_ui5/sap/bw4_data_prev is inactive
■	ICF node /sap/bc/ui5_ui5/sap/bw4_mon_rsmrtl is inactive
■	ICF node /sap/bc/ui5_ui5/sap/bw4_mdm is inactive
■	ICF node /sap/bc/ui5_ui5/sap/bw4_pchain_1 is inactive
■	ICF node /sap/bc/ui5_ui5/sap/bw4_job_1 is inactive
■	ICF node /sap/bc/ui5_ui5/sap/rs_l_wqd is inactive
■	ICF node /sap/bc/webdynpro/sap/rs_l_ui_create_copr is inactive
■	ICF node /sap/bc/webdynpro/sap/rs_l_ui_change_queries is inactive
■	ICF node /sap/bc/webdynpro/sap/RSDMDM_MD_NEW_APP is inactive
■	ICF node /sap/bc/ui5_ui5/sap/bw4_manage_rspm is inactive

Check the warnings (Yellow): These services are inactive in your system.

We need to activate them via SICF tcode.

Type	Message Text...
▲	ICF node /sap/bc/webdynpro/sap/fpm_bics_ovp is active
▲	OData Service APL_LOG_MANAGEMENT_SRV is inactive
▲	OData Service BW4_BW_SEARCH_METADATA_SRV is inactive
▲	OData Service BW4_BW_SEARCH_WHEREUSED_SRV is inactive
▲	OData Service BW4_STAT_SLICE_FILBAR_CDS is inactive
▲	OData Service BW4_STAT_VOL_FILBAR_CDS is inactive
▲	OData Service ESH_SEARCH_SRV is inactive
▲	OData Service RV_C_DPP_WLTGTACTION_CDS is inactive
▲	OData Service RV_C_MDMIJOB_CDS is inactive
▲	OData Service RV_C_PCMLOGOVPLAST30_CDS is inactive
▲	OData Service RV_C_PCMPROCESSCHAINOV_P_CDS is inactive
▲	OData Service RV_C_RSOSSEARCH_CDS is inactive
▲	OData Service RV_C_RSOSTLOGO_CDS is inactive
▲	OData Service RV_C_RSOSUSAGE_CDS is inactive
▲	OData Service RV_ODP_REQUESTS_SRV is inactive
▲	OData Service RV_ODP_SUBSCRIPTIONS_SRV is inactive
▲	OData Service RV_ODP_UNITS_SRV is inactive
▲	OData Service RV_ODQ_DATA_PREVIEW_SRV is inactive
▲	OData Service VBI_APPL_DEF2_SRV is inactive

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 External Aliases System Monitor Active

Filter Details

Virtual Host: Service Path:

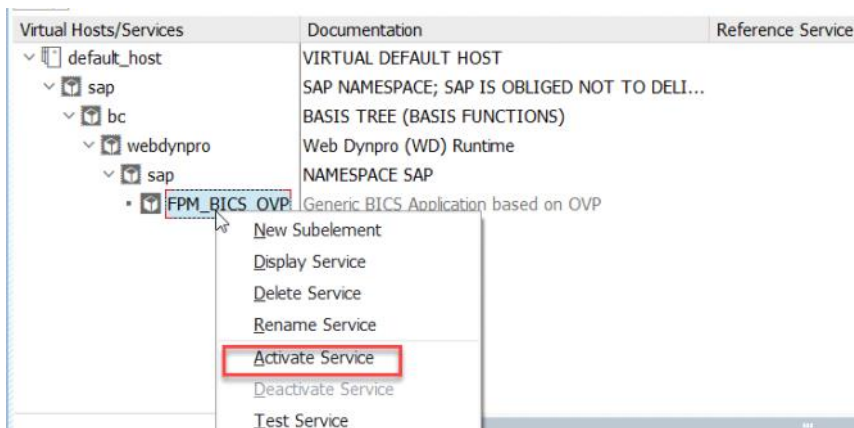
ServiceName:

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!

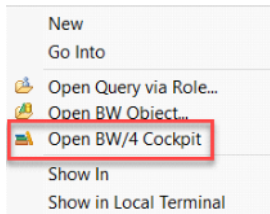
Message no. BW4_UI5_TOOLS001

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.

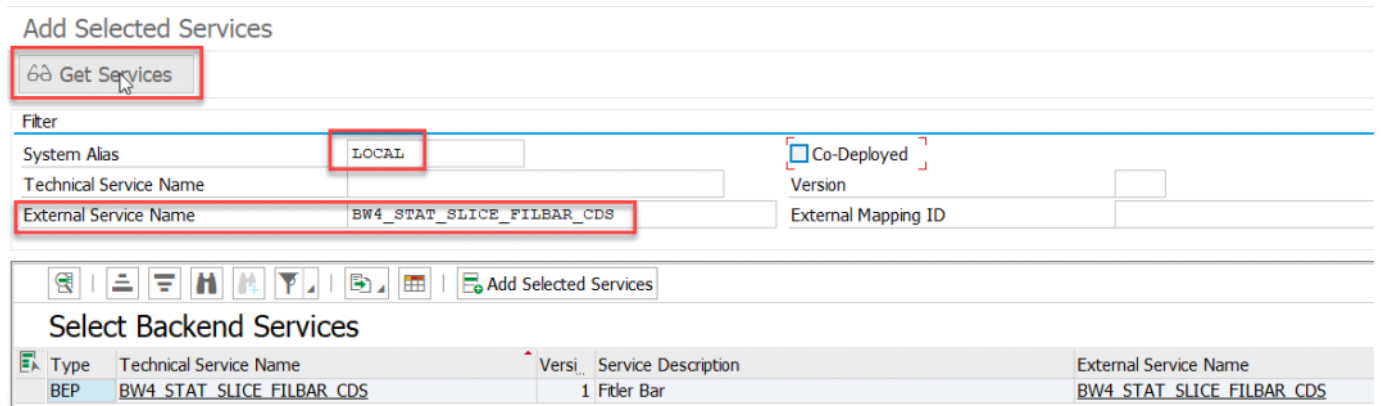
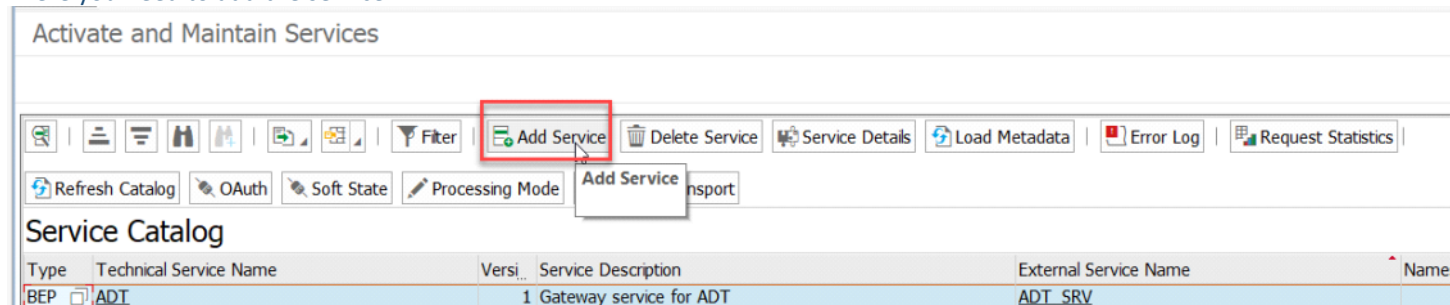
Both option should now be successfully launching the BW/4HANA Cockpit.



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

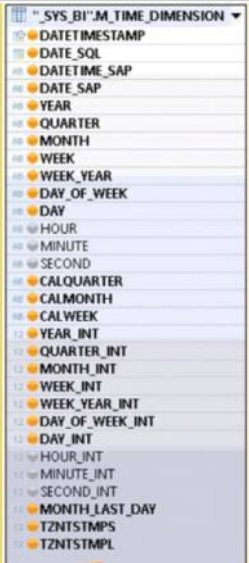
Model

Techr

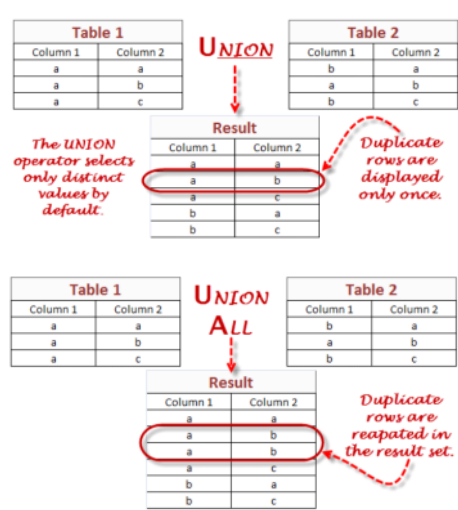
Model

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

Projection
Selecting subset of column for the list of columns

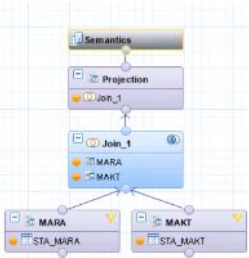


Union
Combining 2 tables with similar structure.
E.g. Actuals + Plan

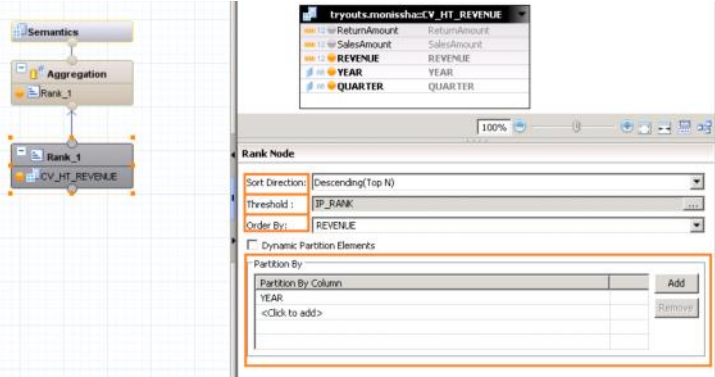


Assignment: HANA UNION Node is a UNION or UNION_ALL?

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)



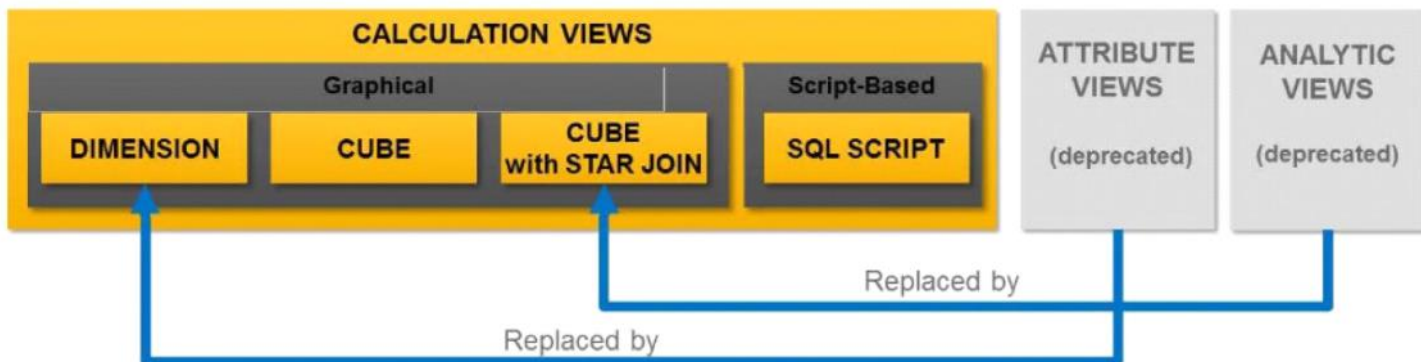
Assignment: WHAT HAPPENS IF I Use aggregation node in dimension CV?

In a Nutshell:

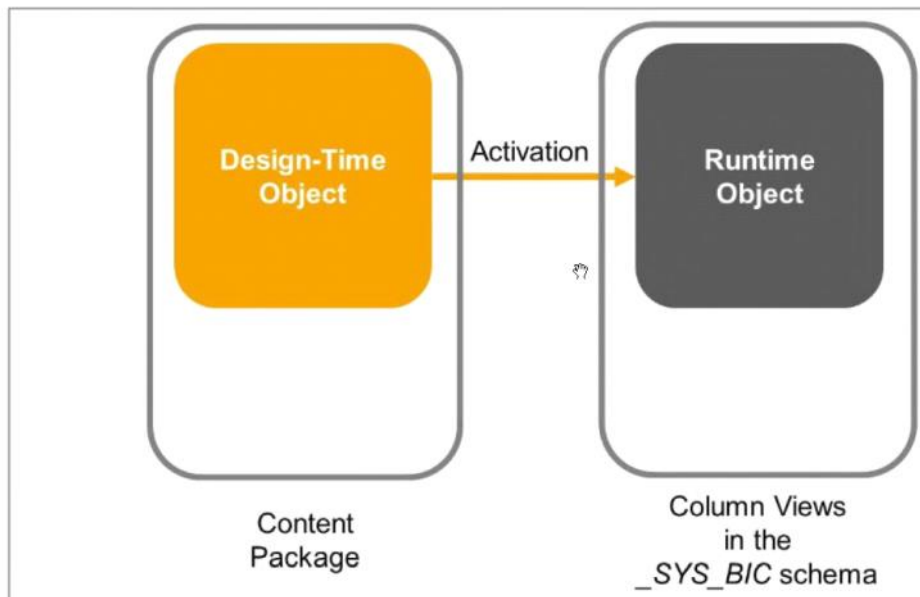
Node Type	Use Case
 Projection	To filter data or obtain a subset of required columns from a data source
 Aggregation	To summarize measures by grouping them together by attribute columns values
 Join	To query data from two or more data sources
 Union	To combine the data from two or more data sources
 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

Calculation View Type	Properties	Default Upper Node
[Blank]	No multidimensional support. Never exposed to any client tool.	Projection
DIMENSION	No multidimensional support. Equivalent to an attribute view *	Projection
CUBE	Designed for data analysis with multidimensional reporting	Aggregation
CUBE With Star Join	Similar to a <i>CUBE</i> Calculation view, but the upper node is a Star Join where you join all the attributes (calculation views of type <i>DIMENSION</i> *)	Star Join

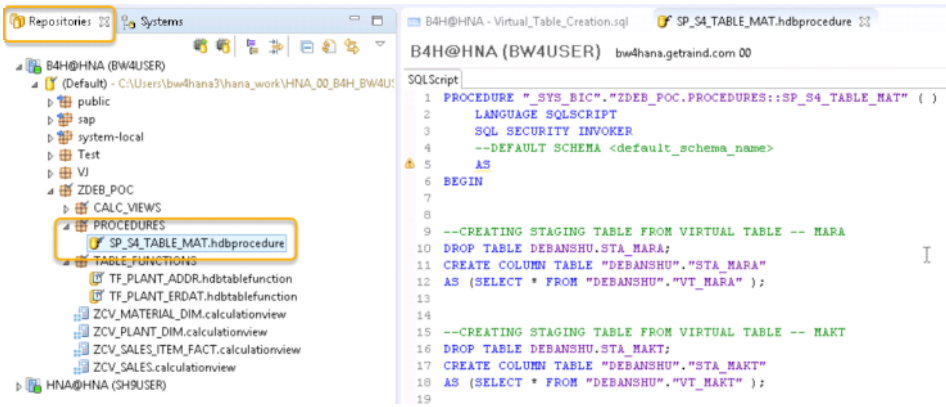
* Only *DIMENSION* Calculation View can be used as a data source in the Star Join node of a *CUBE With Star Join* Calculation View.

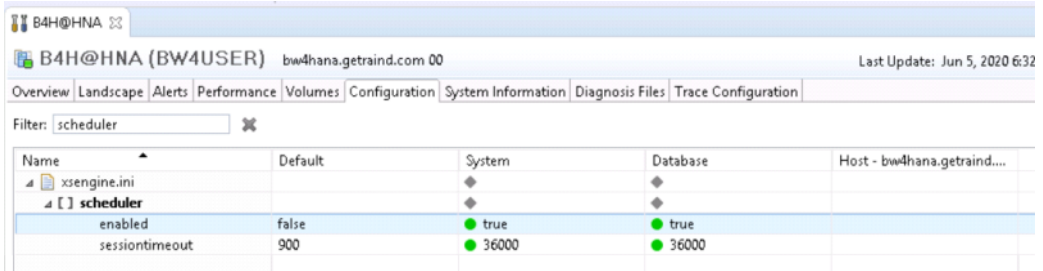


Design-Time vs. Runtime Information Views



HANA DB Stored Procedures

<p>What is a HANA Stored Procedure</p>	<ul style="list-style-type: none"> Used to combine multiple SQL statements which needs to be run regularly. Is a repository object - meaning will be accessible via 'Development Perspective' only. Can be used in SQL console. Allows for complex coding and statements like INSERT, UPDATE, TRUNCATE etc. File gets created with extension - '.hdbprocedure'. Used in XS Job to scheduling.  <pre> 1 PROCEDURE "SYS_BIC"."ZDEB_POC.PROCEDURES::SP_S4_TABLE_MAT" () 2 LANGUAGE SQLSCRIPT 3 SQL SECURITY INVOKER 4 --DEFAULT SCHEMA <default_schema_name> 5 AS 6 BEGIN 7 8 9 --CREATING STAGING TABLE FROM VIRTUAL TABLE -- MARA 10 DROP TABLE DEBANSHU.STA_MARA; 11 CREATE COLUMN TABLE "DEBANSHU"."STA_MARA" 12 AS (SELECT * FROM "DEBANSHU"."VT_MARA"); 13 14 15 --CREATING STAGING TABLE FROM VIRTUAL TABLE -- MAKT 16 DROP TABLE DEBANSHU.STA_MAKT; 17 CREATE COLUMN TABLE "DEBANSHU"."STA_MAKT" 18 AS (SELECT * FROM "DEBANSHU"."VT_MAKT"); 19 </pre>
<p>Purpose 1</p>	<p>Automating the SQL Statements. FULL Load (Truncate and Reload) Delta Load (Column identify the delta - Date/Timestamp)</p>
<p>Purpose 2</p>	<p>To populate the Input Parameters of a CV</p>
<p>Types</p>	<ol style="list-style-type: none"> Catalog Repository <p>Read-Only Read-Write</p>
<p>Method to automate the DB procedure</p>	<p>XSC Jobs</p> <p>Description: Name of your Job Action: Name of your DB Procedure Schedule: Frequency of runs (Daily/hourly/Mon-Wed/Monthly) Desc XSCRON - 7* (* * * * *) = (Y M D DayofWeek Hour Min Sec) Parameters</p>

URL	Now we need to access to XS Engine with the URL <a href="http://<XSengine-host><XS-port>/sap/hana/xs/admin/">http://<XSengine-host><XS-port>/sap/hana/xs/admin/																
Activate XS Job Scheduler	<p>It is required to enable the XS engine scheduler for scheduled backups configured on SAP HANA Cockpit.</p> <ul style="list-style-type: none"> Logon on SAP Hana Studio. Browse to the configuration tab. Open the xsengine.ini and add or configure the value for scheduler as shown below.  <p>Scheduler parameter might not be visible in many cases. For that case kindly add the parameter manually, either directly from HANA Studio or by the following SQL command:</p> <pre>ALTER SYSTEM ALTER configuration ('xsengine.ini','SYSTEM') SET ('scheduler','enabled')= 'true' WITH reconfigure;</pre>																
XS Job Tables	<p>Schema: <code>_SYS_XS</code></p> <p>Tables:</p> <ul style="list-style-type: none"> <code>_SYS_XS.JOBS;</code> <code>_SYS_XS.JOB_SCHEDULES;</code> <code>_SYS_XS.JOB_LOG;</code> 																
Reference Notes	<p>https://help.sap.com/viewer/a8c7476dbef64e14b42939606e1d0c2e/1.0.14/en-US/c37aec5f3ae84887a91c587545ca15e2.html</p> <p>https://launchpad.support.sap.com/#/notes/2465026</p> <p>https://help.sap.com/viewer/6b94445c94ae495c83a19646e7c3fd56/2.0.04/en-US/5ca042ca971f4fddbc1d4a961f7c22ed.html</p>																
Roles	<p>sap.hana.xs.admin.roles::JobAdministrator</p> <p>sap.hana.xs.admin.roles::HTTPDestAdministrator</p>																
XS Cron Format	<p>"xscron": "2016 * * mon,tues,wed,thu 6 0 0" .</p> <p>"xscron": "*" * * * * /30 *"</p> <table border="1"> <thead> <tr> <th>xscron Field (* from left to right)</th><th>Meaning and Permitted Value</th></tr> </thead> <tbody> <tr> <td>Year</td><td>4-digit, for example, 2013</td></tr> <tr> <td>Month</td><td>1 to 12</td></tr> <tr> <td>Day</td><td>-31 to 31</td></tr> <tr> <td>DayofWeek</td><td>mon,tue,wed,thu,fri,sat,sun</td></tr> <tr> <td>Hour</td><td>0 to 23</td></tr> <tr> <td>Minute</td><td>0 to 59</td></tr> <tr> <td>Second</td><td>0 to 59</td></tr> </tbody> </table> <p>Format:</p> <pre>{ "description": "abc", "action": "Procedure or XSJS function",</pre>	xscron Field (* from left to right)	Meaning and Permitted Value	Year	4-digit, for example, 2013	Month	1 to 12	Day	-31 to 31	DayofWeek	mon,tue,wed,thu,fri,sat,sun	Hour	0 to 23	Minute	0 to 59	Second	0 to 59
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DayofWeek	mon,tue,wed,thu,fri,sat,sun																
Hour	0 to 23																
Minute	0 to 59																
Second	0 to 59																

```

"schedules":
[
  { "description": "xyz",
    "xscron": " * * * * * "
  },
  ( "description": "xyzz",
    "xscron": " * * * * * "
  ),
  ( "description": "xyzzz",
    "xscron": " * * * * * "
  )
]
}

```

Examples

- 2013 * * fri 12 0 0

Every Friday of 2013 at 12:00 hours

- * * 3:-2 * 12:14 0 0

Every hour between 12:00 and 14:00 hours on every day of the month between the third day of the month and the second-last day.

→ Tip

In the day field, third from the left, you can use a negative value to count days backwards from the end of the month. For example, * * -3 * 9 0 0 means: three days from the end of every month at 09:00.

- * * * * */5 *

Every five minutes (* /5) and at any point (*) within the specified minute.

i Note

Using the asterisk (*) as a wild card in the seconds field can lead to some unexpected consequences, if the scheduled job takes less than 59 seconds to complete; namely, the scheduled job restarts on completion. If the scheduled job is very short (for example, 10 seconds long), it restarts repeatedly until the specified minute ends.

To prevent short-running jobs from restarting on completion, schedule the job to start at a specific second in the minute. For example, * * * * */5 20 indicates that the scheduled job should run every five minutes and, in addition, at the 20th second in the specified minute.

- * * * -1.sun 9 0 0

Every last Sunday of a month at 09:00 hours

```

{
  "description": "Daily Job for Full data backup",
  "action": "004_SYSTEM_MANAGEMENT.001_PROCEDURES::SP_HOURLY_BACKUP_DELTA",
  "schedules":
  [
    {
      "description": "Hourly from 1am to 6pm",
      "xscron": " * * * * 5:22 0 0"
    },
    {
      "description": "Single run at 7pm",
      "xscron": " * * * * 23 0 0"
    },
    {
      "description": "Hourly from 8pm to 11pm",
      "xscron": " * * * * 0:3 0 0"
    }
  ]
}

```

```
1 {
2   "description": "Weekly Job for Materialization of Weekly Flash Data into Tables",
3   "action": "004_SYSTEM_MANAGEMENT.001_PROCEEDURES::SP_WKFL_POPULATE_FINAL_TAB",
4   "schedules":
5   [
6     {
7       "description": "Weekly: Every Sunday @ 8:30 AM",
8       "xcron": "** * * sun 8 30 0",
9       "parameter": {
10        "IP_RA_FA_FY19_PLAN_FILTER" : "YES",
11        "IP_RA_FA_FY18_ACT_FILTER" : "YES",
12        "LV_HIER_REG" : "C4P1MFCAD",
13        "LV_HIER_BUS" : "C3P1MFCAD"
14      }
15    }
16  ]
17 }
```