Analysis of Standard Logics - SAP Business Planning and Consolidation for NetWeaver

**Applies to:**
SAP Business Planning and Consolidation for NetWeaver 7.X.

**Summary**
This white paper covers the details of how the standard BPC NW logics are implemented and the way to debug it to expedite our implementation.

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Objective
This white paper covers the details of various standard logics available in BPC NW and how they are implemented in the system. Also it explains about what all information’s required for these logics to execute successfully along with where they are saved. Finally it covers need for debugging process and how it is performed in BPC NW.

Standard Logics
BPC as a planning system enables all developers in writing simple code in standard format with required set of parameters for it. These logics having said as standard requires different set of properties and values to be maintained for successful execution of the corresponding logic.

The standard logics available in BPC are,

- Script Logic
- Business Rules
  - Account Transformation
  - Currency Conversion
  - Intercompany Booking
  - US Elimination
  - Validation
  - Copy Opening
  - Automatic Adjustment – Consolidation
- Allocation
Implementation

Logics are required for any planning system to automate the process based on the KPI’s maintained manually in the system. When these logics are standardized and made simple it makes the task easier for the developer. At the same time it is not good for a developer to have only the knowledge of standard format available without understanding the base of it.

BPC system for NW has all its functions implemented using ABAP codes. These standard ABAP codes provided by SAP with this tool for various standard functions are not editable for all, it requires special access key to update it.

Though it is not editable we have the access to read and debug it, which helps in understanding the logic behind every function we perform in the front end.

The architecture below clearly depicts how the standard logics are implemented in BPC and also explains the role of different objects in successful execution of the standard logic in BPC.

*Source: None – Self design

As the figure shows,

1. BPC Admin Client – To maintain the logic, Parameters and Master Data.
2. BPC Excel Client – To Input Data and Report on the calculated values
3. BI System – To perform the Logic Calculation based on the parameters saved BI Tables and write back the results to BPC Cube
Source of Information

The standard logics available in the system require various information to be maintained in the system for operating on it to produce the expected result.

Script Logic

Script Logic is a standard functionality provided by SAP which includes various keywords and helps in performing various planning functions.

Various operations available in script logic are,

- Conditional Operation – WHEN / ENDWHEN
- Function Call Operation – FUNCTION
- Read Operation – LOOKUP
- Scoping Operation – XDIM Members, SELECT, SELECTCASE
- Looping Operation – FOR / NEXT
- Arithmetic Operation – ADD / ENDADD

These operations in the front end are developed using the standard keywords and syntax provided, whereas the same is implemented using ABAP codes in the backend. So based on the parameters passed via the standard logic, the corresponding ABAP code will be executed in the backend to compute the required result.

There are different set of methods that are implemented in the backend for different set of functions/logics and keywords in the front end. These methods relevant to any specific planning function are grouped under a specific class.

The table below gives the list of all classes which has the methods for different standard Script logic Operations in the front end,

<table>
<thead>
<tr>
<th>Class Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL_UJK_ADD</td>
<td>*add/*endadd</td>
</tr>
<tr>
<td>CL_UJK_BEGIN_END</td>
<td>wrap *begin/*end</td>
</tr>
<tr>
<td>CL_UJK_FOR_NEXT</td>
<td>Key word For Next</td>
</tr>
<tr>
<td>CL_UJK_INCLUDE</td>
<td>*include *syslib *use instruction class</td>
</tr>
<tr>
<td>CL_UJK_FUNCTION</td>
<td>functions</td>
</tr>
<tr>
<td>CL_UJK_IIF</td>
<td>IIF conditions in MDX statements</td>
</tr>
<tr>
<td>CL_UJK_LOOKUP</td>
<td>Looking up Values</td>
</tr>
<tr>
<td>CL_UJK_SELECT</td>
<td>Script Logic - Select key word</td>
</tr>
<tr>
<td>CL_UJK_SELECTCASE</td>
<td>instruction of *selectcase/*endselect</td>
</tr>
<tr>
<td>CL_UJK_SUB</td>
<td>class for *sub/*endsub</td>
</tr>
<tr>
<td>CL_UJK_WHEN_ENDWHEN</td>
<td>*WHEN/*ENDWHEN</td>
</tr>
<tr>
<td>CL_UJK_XDIM</td>
<td>xdim related instructions</td>
</tr>
</tbody>
</table>

Note: Check Appendix for identifying the Methods in any Class.
Business Rules

Business Rules are a special type of planning functions which simplifies the configuration of most complex business requirements with standard dimension properties, table parameters and programs.

Any Reporting application requires at least one Business Rule to be maintained in it. The required set of business rules for any application is decided during the creation of any application, once we have included the set of business rules we get the required tables for those included business rules, which needs to be maintained for making use of the corresponding Business Rule.

These tables need to be maintained as per the requirement so that the logic works to produce required result. Business Rules are available only for certain standard set of business needs like for,

- Currency Conversion
- Account Transformation
- US Elimination
- Intercompany Booking
- Validation
- Automatic Adjustments

The below table provides the list of all BI tables where the parameters or values from various Business Rule tables are saved in the back end,

<table>
<thead>
<tr>
<th>Table Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UJP_CALC_ACCOUNT</td>
<td>BPC: Account Transformation</td>
</tr>
<tr>
<td>UJP_COPY_OPE</td>
<td>BPC: Copy Opening</td>
</tr>
<tr>
<td>UJP_ELIM</td>
<td>BPC: Elimination Details</td>
</tr>
<tr>
<td>UJP_ELIMH</td>
<td>BPC: Elimination header</td>
</tr>
<tr>
<td>UJP_FXTRANS</td>
<td>BPC: Currency Translation</td>
</tr>
<tr>
<td>UJP_ICBOOK</td>
<td>BPC: IC Booking</td>
</tr>
<tr>
<td>UJP_METHOD</td>
<td>BPC: Method</td>
</tr>
<tr>
<td>UJP_RULE</td>
<td>BPC: Rule Details</td>
</tr>
<tr>
<td>UJP_RULEH</td>
<td>BPC: Rule Header</td>
</tr>
<tr>
<td>UJP_US_ELIM</td>
<td>BPC: US Elimination</td>
</tr>
<tr>
<td>UJP_VALID_DEF</td>
<td>BPC: Validation Logic Definition</td>
</tr>
<tr>
<td>UJP_VALIDATION</td>
<td>BPC: Validation</td>
</tr>
<tr>
<td>UJP_VALIDATIONH</td>
<td>BPC: Validation Header</td>
</tr>
</tbody>
</table>

Below are the screens of how currency conversion business rule table detail maintained in the front end and the same in corresponding backend BI table,
Front End: (BPC Client BR Table)

<table>
<thead>
<tr>
<th>Account rate type</th>
<th>Source flow</th>
<th>Destination account</th>
<th>Destination flow</th>
<th>Formula</th>
<th>For closing</th>
<th>Apply to path</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVG</td>
<td></td>
<td></td>
<td></td>
<td>AVG</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Screenshot from BPC Admin Client Business Rule table

Back End: (BI Table)

Use SE11 -> UJP_FXTRANS (Database Table) -> Contents -> Appset and Application ID’s -> Execute

<table>
<thead>
<tr>
<th>Number</th>
<th>APPSET_ID</th>
<th>APPLICATION_ID</th>
<th>SEQ</th>
<th>RATE_TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>BPC план</td>
<td>UJP_FXTRANS</td>
<td>1</td>
<td>AVG</td>
</tr>
</tbody>
</table>

*Source: Screenshot from SAP BI system for BPC

Standard programs are available for different business rule to be executed from BPC client. These standard programs trigger the corresponding methods in respective classes of the business rule.

The set of all Classes which includes various Methods for the logical computation of business rules are listed in the table below,

<table>
<thead>
<tr>
<th>Class Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL_UJP_CALC_ACCOUNT</td>
<td>BPC: Account transformation</td>
</tr>
<tr>
<td>CL_UJP_CONSOLIDATION</td>
<td>BPC Consolidation</td>
</tr>
<tr>
<td>CL_UJP_COPYOPENING</td>
<td>BPC: CopyOpening</td>
</tr>
<tr>
<td>CL_UJP_CURR_CONVERSION</td>
<td>BPC Currency Conversion</td>
</tr>
<tr>
<td>CL_UJP_ICBOOKING</td>
<td>BPC: ICBooking</td>
</tr>
<tr>
<td>CL_UJP_ICDATA</td>
<td>BPC: ICData</td>
</tr>
<tr>
<td>CL_UJP_US_ELIM</td>
<td>BPC US elimination</td>
</tr>
<tr>
<td>CL_UJP_VALIDATE</td>
<td>BPC: Validation</td>
</tr>
</tbody>
</table>

The Methods in these classes reads the values of the properties of the stored dimension members which are configured as a standard and the Business Rule table values from the corresponding BI tables to compute and produce the required result.
**Allocation**

Allocation is a key function in any kind of planning scenario, it helps business in planning at a top node level and allocate it across the base nodes.

Allocation logic in BPC can be used in different ways based on the values passed in it,

- Copying values
- Summing values
- Distributing values evenly
- Distributing values based on some ratio or percentage

The parameters passed in this standard logic are the scope for defining from where the value needs to be read, where it needs to be posted and where the ratio is maintained.

This standard logic is performed by the set of all methods available in the class defined in the table below,

<table>
<thead>
<tr>
<th>Class Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL_UJP_ALLOCATION</td>
<td>BPC: Allocation</td>
</tr>
</tbody>
</table>

**Details for Debugging**

Debugging is a step by step process of executing any logic. This plays a key role in understanding any predefined logic in any system.

In BPC NW, for any user who needs debugging access, should have their user maintained in the server manager along with their BI user and Password.

*Source: Screenshot from BPC Server Manager application*

As the screen above shows, for any BPC NW system we can provide debugg access only to 5 users.

Once the debugging details for any user is maintained in the system, he/she can debug the required set of code just by setting a break point in the ABAP code which will be executed as a result of the action performed.
Debugging is an essential part here in standard business logics, because we need to configure a lot of values as per the standard requirements before executing any standard logic and if we have missed some values it's very complex to identify it unless and until we troubleshoot it.

Below is the debugging screen when a currency conversion business rule is executed,

*Source: Screenshot from SAP BI system for BPC

Note:
Check the blogs provided in the reference for more details in debugging of any logic.
Appendix

Prerequisite:
1. The User requires ABAP knowledge to understand these functions.
2. Debugging access to be maintained in BPC Server Manager

TCodes:

Class and Methods:
Use SE80 → Class/Interface → << Class Name >> → << Required Method >>

*Source: Screenshot from SAP BI system for BPC
Related Content

Business Rules Management
Help available in BPC
Enterprise Performance Management homepage
Debugging with BPC7NW - Blog
Troubleshooting BPC NetWeaver Data Manager Packages - Blog
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