SAP IBP Troubleshooting Analysis (Performance)

Parveen Kumar and Deep Singh, SAP
April 9th, 2020
Agenda

- Introduction

- Performance and Troubleshooting
  - Configuration
  - Integration
  - Excel

- Data Lifecycle Management

- Incident Troubleshooting

- SAP IBP Guides, Resources, and Communities

- Q&A
SAP IBP Configuration Common Issues
Description:
- PLOBJID = 100 is created when KF1 data is loaded into planning area and corresponds to PERPRODLOC
- PLOBJID = 101 is created when KF2 data is loaded into planning area and corresponds to PERPRODLOCNEW
- While updating the data at PERPRODLOC picks both PLOBJID = 100, 101 which is unexpected
- So the following issues can occur:
  - Errors when loading data in Excel
  - IBP Application Jobs (Supply Operator, Data Integration etc.) Failure

Solution: Adjust the configuration, for more details refer to the following:
Knowledge Base Article: [2477136](https://answers.sap.com/questions/12118853/multiple-plobids-found-for-existing-attribute-valu.html)
## Issue: Master Data Load Error-Ambiguous value found

### Description:
- We have Product Master Data with PRDID as root, PRDFAMILY and ATT1 as non-root.
- We configured a planning level PL1 where PRDFAMILY is root and ATT1 as non root attribute.
- Consider the above data, system will find ambiguous values for the ATT1 at the planning level PL1.

### Solution:
- Data should be inline with the configuration i.e. only one unique value of ATT1 should be determined for the Product Family PF1.
- The configuration should be changed to accommodate the needs (virtual MDT can help in such scenarios).
- Knowledge Base Article: [2367185](https://answers.sap.com/questions/2367185)

### Master Data

<table>
<thead>
<tr>
<th>PRDID(root)</th>
<th>PRDFAMILY(non-root)</th>
<th>ATT1(non-root)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>PF1</td>
<td>AC</td>
</tr>
<tr>
<td>200</td>
<td>PF1</td>
<td>QA</td>
</tr>
</tbody>
</table>

### Planning Object(PL1)

<table>
<thead>
<tr>
<th>PRDFAMILY(root)</th>
<th>ATT1</th>
</tr>
</thead>
<tbody>
<tr>
<td>PF1</td>
<td>AC or QA (which one to update?)</td>
</tr>
</tbody>
</table>
### Issue: Mandatory attributes

<table>
<thead>
<tr>
<th>PRDID*</th>
<th>Product Desc</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>Product 1</td>
</tr>
<tr>
<td>P2</td>
<td>Product 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CUSTID*</th>
<th>Customer Desc*</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>Customer 1</td>
</tr>
<tr>
<td>C2</td>
<td>Customer 2</td>
</tr>
</tbody>
</table>

#### Description:
- Planning Objects at planning level PERPRODCUST is determined from Product and Customer Master Data
- The cross join generates CVCs for all possible combinations.
- Performance and unwanted combinations

#### Solution:
- Configure Mandatory attribute at the planning level PERPRODCUST.
- The attribute can have NULL values, but combinations shall exist.
- It will control both creation and deletion of the planning object.
**Issue**: Numeric overflow or SQL exception

Error message: AttributeEngine: *overflow in numeric calculation*

**Case 1**: \( KF_{1@Plevel1} = KF_{2@Plevel1} / KF_{3@Plevel1} \)
- Any period having \( KF_{3@Plevel1} = 0 \) or very small value can cause numeric overflow error.
- Add Check for 0 values before division in the calculation.

**Case 2**: \( KF_{1@Plevel1} = KF_{2@Plevel1} \times KF_{3@Plevel1} \)
- Need to ensure that the multiplication factor in KF's should not be so big that the output exceeds 18.6 digits
- In case of SQL exception, check the calculated values of KF’s(KF2 and KF3) being multiplied

**Knowledge Base Articles**:

- [2437373 - IBP: Handling division by 0 in a key figure (KF) calculation](#)
- [2534015 - IBP - Best Practices on Applying UOM Conversion in IBP for Inventory](#)
**Issue:** Attributes as key-figures without start/end periods

- Specify a Start and End Period for attributes and key-figures
- Attributes key-figures are used to:
  - Expose a master-data attribute as a key-figure to aid modelling
  - Generate CVCs and time-series records for a particular planning level automatically after data-integration
- When start / end period is unspecified, the system will create time-series records for the key-figure for all periods in the time profile (even beyond planning horizon) which impacts performance
- Knowledge Base Article: 2728509

⚠️ Caution

If you decide to use time-dependent conversion key figures, please be aware that using such key figures can cause higher memory consumption, and have a detrimental impact on performance.
IBP Integration Best Practices
Data Integration- Key Performance Issues

- Tasks that were working fine start failing due to increase in data
- Increased system resource usage
- Impacting the interactive user performance.
- Longer execution time
- Job Failures- Overlapping of the jobs that updates same set of data
- Exported data is not inline with the data shown in the excel.
Inbound integration - Tips

- Avoid Data Upload Simultaneously at the same planning level.
- Merge the jobs that update the key figures at the same level.
- Use the INSERT_UPDATE mode instead of REPLACE.
- COPY_OPERATOR to clear the key figures if there are multiple REPLACE jobs at the same level.
- Attribute as Key figure Configuration.
How the data is stored?

- All the stored key figures in the same planning level are stored in the one database row.
- If you run 2 parallel jobs updating the key figures on the same planning level. The database lock can happen and jobs would fail.
- If you run 2 master data jobs sharing the planning level at the same time, the jobs might fail due to database lock.
Integration Global Parameters.

JOB_THREAD_COUNT – Default Value 1

Only one data import job can be processed at a time.

If you override this value, you assume the responsibility to orchestrate your data integration jobs and ensure that the ones that are processed in parallel do not interfere with one another.

You should, for example, avoid the following:

✓ Allowing more than one key figure import job for the same planning level in a planning area to be processed in parallel.

✓ Allowing more than one master data import job for the same planning area to be processed in parallel.
REPLACE JOB

If a task is executed in ‘REPLACE’ mode all data of the target table is deleted and replaced with the selected data.

So, based on the requirement you have to judge if using replace mode is the best option or a combination of Copy Operator and Insert_update should be used because of following benefits of Copy operator:

✓ It only updates where the KF is not NULL
✓ No Need to clear the KF values at the same level multiple times.
✓ You can control the deletion of the key figure data.
✓ Multiple tasks can update the same IBP table
Clear KF values using Copy Operators

**Use Case 1**: You need to REPLACE the data for NA and EMEA with different tasks. You can’t use the REPLACE as it will overwrite the data written by the task with NULL values.

**Solution:**

This can be orchestrated inside IBP using application job chain or using an external job scheduler (common) to run at appropriate/desired times for NA and EMEA respectively.

You can do the following:

- Copy operator with filter (= NA) to clear KF values followed by KF import Insert/Update to update KF data for NA
- Copy operator with filter (= EMEA) to clear KF values followed by KF import Insert/Update to update KF data for EMEA
Outbound integration

- Filter Pushdown
- Attribute Based Filter
- Time Based Filter
- Value Base Filter
- Data Export in Specific UOM/Currency.
Outbound integration

- Split the extraction of the required data into multiple tasks based on different filter conditions wherever possible.
- Use Attribute and Time Based Filters that are pushed down to IBP Calculation Scenario.
- Always specify the exact PERIODIDn attribute based on the time level you want to extract the data.
- Avoid the concurrent execution of the data export tasks.
Attribute Based Filter

- Filters are pushed down to Calculation Scenario
- Reduces the data volume to be processed.
- Optimal System Resources—Memory, CPU
- Lower Execution Time

Key Recommendation:

- Do not use the IN/NOT IN operator.
- Instead OR operator for filter conditions.

For e.g. Use (PRDID='X' OR PRDID='Y') instead of PRDID IN('X','Y').
Define Filter on the PERIODIDn attribute instead of TSTFR or TSTTO

Two ways to specify the filter for time periods:

✓ Specify absolute PERIODID
  - When you know the period id of the periods for which key figure data is to be extracted
  - Only "equals" operator, i.e. ",=", is supported in conjunction with "OR"

For example, (PERIODID0 = 1045). Extract key figure data for period 1045.

For example, (PERIODID0 = 1045 OR PERIODID0 = 1046 OR PERIODID0 = 1047). Extract key figure data for periods 1045, 1046, and 1047.
Specify periods relative to current period

- This option is used when you want to specify an interval relative to the current period.
- Only ">=" and "<=" operators are supported in conjunction with "AND".

For example, (PERIODID0 >= 0 AND PERIODID0 <= 0). This filter will extract key figure data for current PERIODID0 (whatever that period is).

Consider another example, (PERIODID0 >= 0 AND PERIODID0 <= 1). This filter will extract key figure data for current PERIODID0 (whatever that period is) and one next future period.

Consider yet another example, (PERIODID0 >= -1 AND PERIODID0 <= 2). This filter will extract key figure data for current PERIODID0 (whatever that period is), one previous past period, and next two future periods.
Value Based Filter

To further restrict the volume of data to be transferred, consider filtering based on key figure values.

The following list contains examples for filters you can use when you want to export key figure data for the DEMAND key figure:

- Export DEMAND key figure where the values for DEMAND are neither 0 nor NULL:
  \[(\text{DEMAND} \neq 0 \text{ AND DEMAND IS NOT NULL})\]
- Export DEMAND key figure where the values for DEMAND are not NULL:
  \[(\text{DEMAND IS NOT NULL})\]
- Export DEMAND key figure where the values for DEMAND are greater than 0:
  \[(\text{DEMAND} > 0)\]

Note: You cannot set a range to export key figure data that lies between two values.
Filter optimization Results

Extracted Record Count (in Million)

Execution Time

Before Optimization
After optimizing the filters
UOM Conversion

Use Case – You would like to extract the data in the BaseUOM.

Suboptimal filter Conditions
✓ SOPSAPIBP1.BASEUOM = SOPSAPIBP1.UOMTOID
✓ SOPSAPIBP1.UOMID = ‘EA’

Disadvantages:
- Data will be extracted in all UOMs
- The filtering is done in the BaseUOM
- Unnecessary overhead in the IBP and CPI-DS
You have 5 UOM factors maintained in IBP, and you have a filter in CPI as mentioned below:

✓ SOPSAPIBP1.BASEUOM = SOPSAPIBP1.UOMTOID
✓ SOPSAPIBP1.UOMID = ‘EA’

Then the data passed to CPI as mentioned below for a single combination will be as:

<table>
<thead>
<tr>
<th>PRDID</th>
<th>CUSTID</th>
<th>UOM</th>
<th>UOMTO</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBP-100</td>
<td>CU1</td>
<td>EA</td>
<td>KG</td>
</tr>
<tr>
<td>IBP-100</td>
<td>CU1</td>
<td>EA</td>
<td>PC</td>
</tr>
<tr>
<td>IBP-100</td>
<td>CU1</td>
<td>EA</td>
<td>BOX</td>
</tr>
<tr>
<td>IBP-100</td>
<td>CU1</td>
<td>EA</td>
<td>PALLET</td>
</tr>
<tr>
<td>IBP-100</td>
<td>CU1</td>
<td>EA</td>
<td>TON</td>
</tr>
</tbody>
</table>
UOM Conversion

There are 2 possible ways to solve this issue:

Option 1: Use the UOMTOID filter as SOPSAPIBP1.UOMTOID = ‘EA’

✓ Extract the data in one UOM
✓ Convert these values in the BaseUOM in the target system.
✓ Always ensure that UOMTOID/CURRTOID is defined.
✓ You will get the aggregation of the value in all UOMs
Now in Excel or CPI-DS or Copy operator or wherever else user wants key figure values in base UoM, all they have to do ask for UOMTOID = 'BASE'.

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SAP IBP Excel
Save simulation with different cases:

✓ You may have same data for description attributes but with different cases.

✓ In such cases you might get different error while trying to pull up the data in excel addin.

✓ In such cases the best way to check if the issue is because of difference in cases is by removing the description attributes from planning view selection and loading the view again and check if the issue still exists on trying to simulate or save a value

✓ If the issue is resolved then ensure to load the MDT with uniform case for description attributes.

✓ For Example: the value for `<attribute1>` is **XYZ** and **Xyz** in two different combination

✓ KBA : [2488808](#)

Some other important KBA’s

✓ [2686746 - IBP Add-In for Microsoft Excel Best Practices and Performance Considerations](#)

✓ [2108186 - S&OP / IBP Add-In for Microsoft Excel: Recommended Sizes for Planning Views](#)

✓ [2153455 - Planning view performance recommendations](#)
Data Lifecycle Management
Data Lifecycle Management

Data Creation

Purge the data

Data Planning

Transfer/Manage
Data Lifecycle Management

Data in your system grows over time and it needs to managed well

- Unused data occupying valuable in-memory space.
- Data isn’t used in any business planning functions.
- Undesired interference, performance or other operational issues.

Advantages of Data Lifecycle Management:

- Gain more working memory
- Better Performance
- Right Sizing
Data Lifecycle Management

Due to multiple job runs and manual uploads the data in the system for a certain planning area can increase over time which can lead to increase in:

- Active records
- Change History records (If the planning area is change history enabled)
- Null records and 0 records (where all records are null or 0 for a certain combination across a period)
- Data Outside Planning Horizon

Help Document: Data Lifecycle Management

KBA: 2728485 - IBP: Recommendation for Data Lifecycle Management
### Time Series (2,103)

<table>
<thead>
<tr>
<th>Week</th>
<th>Planning Area</th>
<th>Version Name</th>
<th>Date</th>
<th>Active Time Series</th>
<th>Historical Time Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week: -3</td>
<td></td>
<td></td>
<td></td>
<td>39,178</td>
<td>49</td>
</tr>
<tr>
<td>Week: -2</td>
<td></td>
<td></td>
<td></td>
<td>42,388</td>
<td>48</td>
</tr>
<tr>
<td>Week: -1</td>
<td></td>
<td></td>
<td></td>
<td>42,812</td>
<td>48</td>
</tr>
<tr>
<td>Week: 0</td>
<td></td>
<td></td>
<td></td>
<td>43,312</td>
<td>48</td>
</tr>
</tbody>
</table>
Purging the unwanted data

Review record count of transactional data

Use the IBP System Monitoring application to get an understanding of the transactional data record counts per planning area and version.

Remove unneeded data - Purge operators should be scheduled in the system for the respective planning area on regular intervals considering the frequency of the data loads which can be manual or due to different operator jobs.

✓ Purge Change History Job
✓ Purge Key Figure Job to remove the Null or 0 entries
✓ Purge Key Figure Data Outside Planning Area Planning Horizon Job
Purge Key Figure Data

- Deleting key figure data from a specific base planning level (optional)
- Deleting key figure data if all key figure values in a version are null (optional)
- Deleting planning objects (optional)
Purge Jobs

Purge Change History Data:
- Delete all change history data that is older than a specified period.
- Select the planning area and version.

Purge Key Figure Data Outside Planning Horizon
- Delete key figure data that is outside the planning area's planning horizon.
- Key figure data is not used by any planning functions.

Purge Change History Data

<table>
<thead>
<tr>
<th>Parameter Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameters</td>
</tr>
<tr>
<td>*Planning Area:</td>
</tr>
<tr>
<td>*Version:</td>
</tr>
<tr>
<td>Older Than (Days):</td>
</tr>
</tbody>
</table>

Purge Key Figure Data Outside Planning Area Planning Horizon

<table>
<thead>
<tr>
<th>Parameter Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
</tr>
<tr>
<td>*Planning Area:</td>
</tr>
<tr>
<td>Delete Planning Objects:</td>
</tr>
</tbody>
</table>
Manage Creation of Change History Records

Settings for Change History - ZIBP

Key Figures

Administrative Information

Tracking change history for key figures can have a significant effect on performance. This effect increases with each additional source of change that you track.

Use this feature with caution.

<table>
<thead>
<tr>
<th>Key Figure</th>
<th>Source Of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consensus Demand Plan</td>
<td></td>
</tr>
</tbody>
</table>
Incident Troubleshooting
Before the Incident Creation

Knowledge Base
Use the expert search on the incident creation to search for the existing solutions

https://launchpad.support.sap.com/#/mynotes?tab=Search

Help Portal
The IBP Help Portal provides update-to-date system, product, and application support content and references to steer you in the right direction

https://help.sap.com/ibp

Community
Stay up to date with the latest Community news, projects, and features. Ask questions and join in the conversation to share information and best practices with your peers.


Expert Chat
You can use the real time support channel like expert support to get immediate assistance on the issues
Create an Incident

Please provide us with more information about your issue or question. This detailed information will help to speed up incident processing.

- I consent to SAP Support reproducing the described issue while connected remotely to all environments, including production, using any steps provided by me. This includes steps that might lead to changes being made for the purpose of applying a fix, change, or correction on my behalf. This consent remains valid until my issue is resolved.

**Subject:** System.OutOfMemoryException

**Description:**

**Language:** English

**Component:** SCM-IBP-XLS-UI (Frontend)

Alternative Support Channels:

- System.OutOfMemoryException error when chapter is refreshed in SAP Disclosure Management (KBA 1980129)
  - KBA (problem)
  - EPM-DSM
  - Error: "Exception of type "System.OutOfMemoryException" is displayed when refreshing a document"

- Error: System.OutOfMemoryException. Row not found or changed - SAP Disclosure Management (KBA 1954123)
  - KBA (problem)
  - EPM-DSM
  - When manually refreshing a workbook or word document the following errors are generated: "System...."

- IBP: Excel Add-in: "System.OutOfMemoryException" popup (KBA 2697054)
  - KBA (problem)
  - SCM-IBP-XLS-UI
  - You are working on the Excel UI, logged on the IBP add-in, and receive the following error messag...

- Error: "System.OutOfMemoryException" when attempting to refresh Web Intelligence reports in .NET InfoView (KBA 1185789)
  - KBA (how to)
  - BI-BIP
  - In BusinessObjects Enterprise XI Release 2, when attempting to refresh Web Intelligence reports i....
Please provide us with more information about your issue or question. This detailed information will help to speed up incident processing.

- I consent to SAP Support reproducing the described issue while connected remotely to all environments, including production, using any steps provided by me. This includes steps that might lead to changes being made for the purpose of applying a fix, change, or correction on my behalf. This consent remains valid until my issue is resolved.

Subject: Optimizer found no solution

Description:

Language: English
## SAP Expert Search

### Search Term:
- ambiguous values

### Excluded Components (Exact):
- No Restriction

### Released On (Pre-Defined):
- No Restriction

### Soft.Comp.:
- No Restriction

### Support Package (Greater Than):
- No Restriction

### Product:
- No Restriction

### Support Package (Equal):
- No Restriction

### Release Status:
- No Restriction

### SAP Security Patch Day:
- No Restriction

### Components (Start with):
- SCM-IBP

### System:
- Enter System ID

### Components (Exact):
- No Restriction

### Fuzzy Threshold:
- Close Match (0.9)

### Products Version:
- No Restriction

### Priority:
- No Restriction

### Country/Region:
- No Restriction

### Document Type:
- No Restriction

### 2 document(s) found

<table>
<thead>
<tr>
<th>SAP Component</th>
<th>Number</th>
<th>Version</th>
<th>Title</th>
<th>Category</th>
<th>Priority</th>
<th>Released On</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCM-IBP-INT</td>
<td>2367185</td>
<td>5</td>
<td>Master Data Load Error-Ambiguous value found for non-root...</td>
<td>How To</td>
<td>Normal</td>
<td>07.05.2019</td>
</tr>
<tr>
<td>SCM-IBP-XLS-UI</td>
<td>2599855</td>
<td>3</td>
<td>IBP: Popup “EPM - Ambiguous Name” when adding text to non-IBP worksheet</td>
<td>Problem</td>
<td>Normal</td>
<td>20.12.2018</td>
</tr>
</tbody>
</table>

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Incident Creation

➢ Refer to the below to provide all the information
  o Provide Steps to Reproduce
  o Environmental details (URL, PA, Template..)

2450436 - How to create the perfect incident for SCM-IBP component and subcomponents - guided answers

➢ Support Log Assistant
  o Provide all the necessary log files based on the component.
  o Analyze files to look for probable solution.
  o Excel Performance/Fiddler Trace for IBP excel related issue.
  o Supply Diagnosis files for the Supply Planning Operators.
  o CPI Debug package for the CPI-DS Integration Issues.
Support Log Assistant

- Language: English
- Component: SCM-IBP-SUP (Supply)

Attachments

Please review the attachable file types and ensure that each attachment is less than 250 MB.

- Please note that the Support Log Assistant service is only available in English.

Suggested Files:
- IBP Operator Dump

This information might help you right away

Did you know that once we provide you with an answer to your issue, only you can close the incident?

Please let us know whether we answered your issue by making a comment and confirming (closing) the incident. This helps us improve the service we provide to you by allowing us to better personalize help, advice, and content for you in the future.

There are no solution suggestions yet. Please provide more details about the issue.
Support Log Assistant

Create Incident Knowledge Base Enter search term

Create an Incident

Language: English

Component: SCM-IBP-XLS (Excel Client)

Attachments

Please review the attachable file types and ensure that each attachment is less than 250 MB.

Please note that the Support Log Assistant service is only available in English.

Suggested Files:
- IBP Excel Performance Trace
- IBP Excel Fiddler Trace

This information might help you right away

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There are no solution suggestions yet. Please provide more details about the issue.
Solutions

The SAP IBP solution combines capabilities for sales and operations, demand, response and supply planning and inventory optimization – in the cloud.


Training

Whatever the location, budget or learning style of you require, SAP has a learning solution to fit your needs. Check out the IBP options available.


Help Portal

The IBP Help Portal provides update-to-date system, product, and application support content and references to steer you in the right direction.

https://help.sap.com/ibp

Webinars & Events

Learn more about SAP IBP through the numerous events, customer and product webinars we are offering this year and explore past sessions recordings.

Thank you.

Contact information:

Parveen Kumar, IBP Customer Office
parveen.kumar01@sap.com

Deep Singh, IBP Customer Office
deepl.singh02@sap.com