BPO Alert Reporting Analysis - Setup and User Guideline

BPO Alert Reporting for BPMon on MAI
(as of SAP Solution Manager 7.1 SP12)

October 2014
# TABLE OF CONTENTS

1  INTRODUCTION.......................................................................................................................... 4

2  SETUP........................................................................................................................................ 7

   2.1  Prerequisites.............................................................................................................................7

   2.1.1  SAP Solution Manager System Release ..............................................................................7

   2.1.2  BW components already activated ....................................................................................7

   2.1.3  Solution Manager Configuration: Configuration User and RFC Connection ....................7

2  Activation .....................................................................................................................................9

   2.2.1  Automatic BPO Alert Reporting Setup .............................................................................9

   2.2.2  Manual BPO Alert Reporting Setup ..................................................................................10

   2.2.3  BPMon Customizing Settings ............................................................................................12

2  Accessing the BPO Alert Reporting ............................................................................................14

2.4  Monitor the Data Transfer .........................................................................................................15

2.5  Housekeeping .............................................................................................................................18

3  TROUBLESHOOTING....................................................................................................................19

   3.1  Analyze Activation Issues ......................................................................................................19

   3.1.1  The BPO Alert Reporting Link Returns with an Error ......................................................19

   3.2  Analyze Browser Errors .........................................................................................................20

   3.2.1  Identify and Debug oData Errors ......................................................................................20

   3.2.2  Identifying and Debugging Errors in Java Script Files ......................................................22

   3.3  Performance Analysis .............................................................................................................22

   3.4  Data Analysis ..........................................................................................................................23
1 Introduction

The Business Process Monitoring (BPMon) function within SAP Solution Manager offers the possibility to monitor the availability and reliability of business processes that have been maintained in a solution landscape. BPMon offers a wide range of different monitors for different business areas as well as cross application monitors, e.g. IDoc monitoring.

As of Solution Manager 7.1 SP12, BPMon is available on the Monitoring and Alerting Infrastructure (BPMon on MAI). For BPMon on MAI, the alerts that occur are assigned to different areas within Business Process Operations (BPO).

For BPMon on MAI, a new Alert Reporting function for these BPO alerts is available as of Solution Manager 7.1 SP12. It is based on the Business Warehouse (BW) functionality and the Monitoring Application Infrastructure (MAI). It enables you to:

- Display the number of red and yellow alert groups, alert instances and incidents for a specific business process context split up by rating in graphical charts for a period of time
- Display the maximum duration until alert group confirmation for a specific business process context split up by rating in graphical charts for a period of time
- Visualize a daily and monthly trend in numbers of alert groups, alert instances, incidents and maximum duration until alert group confirmation

Please observe that as of Solution Manager 7.1 SP12 customers can choose which monitoring infrastructure to use for BPMon: classic BPMon or BPMon on MAI. The choice is made per solution. Customers can have solutions using classic BPMon on the same Solution Manager system as solutions using BPMon on MAI. For classic solutions, the classic BPMon Alert Reporting function as described in the BPMon Alert Reporting Setup Guide can be used.

The BPO Alert Reporting described in this Setup Guide is only available for solutions using BPMon on MAI. For these solutions, BPMon on MAI as described in the Setup Guide for BPMon on MAI has to be configured, generated and activated.

The BPO Alert Reporting covers the following functionality

- Accesses the unified MAI storage locations
- Relies on the unified MAI data transfer
- Uses the UI5 user interface
- Has an enhanced default analysis scope
- Uses the twin cube concept incl. automated housekeeping

The data accesses are realized technically as RFC queries (the queries are not related to BI Content anymore), working on the collected and stored data in the BW. They are called by oData services within an UI5 dashboard which can be accessed directly following an URL in a web browser.

The BPO Alert Reporting dashboard graphics allows tracking of:

- the number of alerted managed objects (see Figure 1)
- the number of red and yellow alert groups, instances and incidents per managed object (see Figure 2)
- the maximum duration, until red and yellow rated alert groups have been confirmed, per managed object (see Figure 2)
- the trend for alert group, instance and incident numbers (see Figure 3)
- the trend for the maximum duration until alert group confirmation
The entry screen (see Figure 1) enables the limitation of the accessed data volume to a reasonable amount by selecting the timeframe\(^1\) and the BPMon Context for a specific Solution\(^2\) in SAP Solution Manager.

The data analysis is done based on Managed Object level. A drill down to days or months is possible. The displayed Alert Reporting Analysis can be filtered regarding:

- Managed Object
- System
- Monitor

\(^1\) According to the twin cube concept, the data are stored as daily and monthly records. According to the default housekeeping settings in the SOLMAN_SETUP the daily records are kept at least 90 days. That is why the BPO Alert Reporting switches to monthly display with horizons larger than this setting.

\(^2\) All solutions with BPMon on MAI active are shown, for which the user is authorized. The recently selected solution is saved as a user-specific setting and reloaded, when the user is calling the BPO Alert Reporting again.
Figure 2 - Number of Red and Yellow Alert Groups, Instances, Incidents and Maximum Duration until Alert Group Confirmation per Managed Object

Figure 3 - Number of Red and Yellow Alert Groups Created over Time per Managed Object
2 Setup

In order to use the BPO Alert Reporting, a productive solution with BPMon on MAI should already be available in SAP Solution Manager so that the monitoring data extraction and analysis can be performed.\(^3\) It is strongly recommended to configure, generate and activate BPMon on MAI in a solution before continuing with the activation process as described in the subsequent chapters.

**DISCLAIMER:**
Please use this Setup-Guide for BPO Alert Reporting for BPMon on MAI at your own risk. All our recommendations regarding the activation of this functionality are based on our general experience and maybe are not valid for your specific implementation, especially when you are already using the BW component in SAP Solution Manager. In this case, please consult and involve the people already working with BW in the target system to make sure that all functions in BW keep working.

2.1 Prerequisites

2.1.1 SAP Solution Manager System Release

In order to use the BPO Alert Reporting feature of BW, implementing the current releases and support packages for the ST and ST-BCO components is mandatory. We recommend the following releases as an absolute minimum configuration:

<table>
<thead>
<tr>
<th>Software Component</th>
<th>Release</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST</td>
<td>SAP Solution Manager</td>
<td>710</td>
</tr>
<tr>
<td>ST-BCO</td>
<td>BI Content for SAP Solution Manager</td>
<td>710</td>
</tr>
</tbody>
</table>

2.1.2 BW components already activated

Before setting up BPO Alert Reporting, you need to find out if Business Warehouse (BW) in your SAP Solution Manager is already being used. This can be checked in table “RSADMINA” on your SAP Solution Manager system, which can be accessed by transaction SE16 directly. If the table is empty, no usage of BW components was activated before and the client for BW usage can be chosen freely.

If an entry already exists, a BW client was already set before. You have to use the client defined in column “BWMANDT” for all further setup activities. Otherwise, inconsistencies in the BW part might occur later on during activation process.

If no entry exits, choose the BW client. Which client to choose, depends on your authorization concept for the clients in your SAP Solution Manager system. We recommend using the productive SAP Solution Manager client (already in use for BPMon) for BW activation and to use SOLMAN_SETUP (i.e. the automated Solution Manager Configuration tool) for the activation process.

2.1.3 Solution Manager Configuration: Configuration User and RFC Connection

During the preparation of your landscape for the BPO functions (“System Preparation” and “Basic Configuration” and “Managed System Configuration” and “Technical Monitoring” see Figure 4) a configuration user is created automatically.

---

\(^3\) More information on how to set up BPMon on MAI can be found in the Setup Guide available in http://service.sap.com/bpm \(\rightarrow\) Media Library \(\rightarrow\) Technical Information \(\rightarrow\) “Setup Guide - Business Process Monitoring on MAI”. Make sure that you generate and activate your monitoring configuration.
The system assigns roles and authorizations to this setup user automatically for:
- Performing the Technical Setup of BPO Alert Reporting
- Performing BW reporting (data analysis, display trend analysis and alerting)
- Displaying Dashboards

Alternatively, you can also use the Solution Manager Administrator user (for example SOLMAN_ADMIN).

![SAP Solution Manager Configuration: Basic Configuration](image)

**Figure 4 - Solution Manager Configuration**

To enable the data transfer from SAP Solution Manager to BW, an RFC Connection is required, which is also part of the automatic Solution Manager Configuration.

Find more information on the automatic user creation concept in the Security Guide in section 8.2.

Read as well the details about the authorizations and RFC connections for Business Process Operations functionalities in the Security Guide in chapter 25.
2.2 Activation
The following chapters describe the activation process of the BPO Alert Reporting via the SOLMAN_SETUP. The activation is usually done automatically. Despite of that it is also possible to do the activation manually. If any problems arise during activation, please refer to chapter 3 Troubleshooting of this document.

2.2.1 Automatic BPO Alert Reporting Setup
The BPO Alert Reporting consists of a Business Server Page (BSP) containing the java script files, which are generating the user interface in HTML5 (UI5) and calling the relevant methods of the oData service in ABAP.

These elements are activated automatically in the basic configuration of the SOLMAN_SETUP (see Figure 5). To check, whether the BSP and the oData Service have been triggered for activation successfully, see “Basic Configuration” → “5 Configure Automatically” → “Activate Services”. In the log entry “SM_BASIC_SETTINGS_3” hit the link “Show”. Find in the popup the following services:

- /sap/bc/bsp/sap/sap_bpm_alrep
- /sap/opu/odata/sap/sap_bpm_alrep_srv

This means that these two services have been activated in the transaction SICF.

As a third step the oData Service needs to be assigned to a system alias. This is done automatically with “Basic Configuration” → “5 Configure Automatically” → “Activate Piece List”. If the system alias in your system is LOCAL, you shall now be able now to start BPO Alert Reporting. If the system alias is different, please check the section 0

2.2.2 Manual BPO Alert Reporting Setup

Despite of the automatic BPO Alert Reporting activation it is possible to do the activation steps manually. Usually, you might consider these steps only if you are not sure whether the automatic activation has been performed.

The main transaction to activate and maintain the oData Service is transaction /IWFND/MAINT_SERVICE. Search for the technical name of the service SAP_BPM_ALREP_SRV (see Figure 6). If the ICF node ODATA does not show a green traffic light, activate if with “ICF Node” → “Activate” (see Figure 7).

In order to make BPO Alert Reporting work there shall be assigned a valid System Alias. Usually, this System Alias is LOCAL. If you have performed the automatic setup, you will find this entry already in there. It might happen that in your system the system alias has been named differently. In those cases it is really easy to correct the system alias.

To check the System Alias used in your system, hit the button “Customizing” (see Figure 8). If there is an entry displayed, check whether the value help of the field SAP System Alias contains the value LOCAL. If not, there shall be a similar local system entry. If there is no entry or one with a non-existing system alias, remember the Service Doc. Identifier and Version (SAP_BPM_ALREP_SRV_0001 version 1) and hit the button “New Entries”. Enter the Service Doc. Identifier, the Version, and the correct SAP System Alias from 4

After the activation in transaction SICF the two paths default_host/sap/bc/bsp/sap/sap_bpm_alrep and default_host/sap/opu/odata/sap/sap_bpm_alrep_srv shall be activated. Grey font means inactive, black means active. In order to activate right-click sap_bpm_alrep (respective sap_bpm_alrep_srv) and choose “Activate Service”.

---

Figure 5 - Activation of BSP and oData service for BPO Alert Reporting

---

4 After the activation in transaction SICF the two paths default_host/sap/bc/bsp/sap/sap_bpm_alrep and default_host/sap/opu/odata/sap/sap_bpm_alrep_srv shall be activated. Grey font means inactive, black means active. In order to activate right-click sap_bpm_alrep (respective sap_bpm_alrep_srv) and choose “Activate Service”. 

10 October 2014
the value help and activate flag default system. Save the entry. View again the customizing of the system alias assignment. If there had been an entry before, you shall see now two entries. Keep only the new entry and save again.

Now you shall be able now to start BPO Alert Reporting.

Figure 6 - Activated Service in Transaction /IWFND/MAINT_SERVICE

Figure 7 - Activate BSP
2.2.3 BPMon Customizing Settings

If you are using SAP Solution Manager 7.1 SP12, please make sure that for each monitoring object the BW Granularity is set to “Long” (see Figure 9). Otherwise no daily and monthly data will be stored in the MAI info cubes and the alert data cannot be shown in BPO Alert Reporting.

In order to check or maintain these setting, go via the work center “Business Process Operations (New)” to the “Setup Business Process Monitoring” (see Figure 10). In the context navigation select your solution to “Business Scenarios”. Then choose the business scenario, business process and step and select the monitoring object for which you want to transfer the alerts (see Figure 11). Choose the hyperlink for the monitoring object and go to tab “Further Settings”.

If you change the BW Granularity make sure that you generate and activate the monitoring object afterwards.
Figure 10 - Access the BPMon Settings via the Work Center "Business Process Operations (New)"

Figure 11 - Business Process Monitoring Setup
2.3 Accessing the BPO Alert Reporting

The BPO Alert Reporting can be accessed via button “Reporting” in the Alert Inbox of work center “Business Process Operations (New)” (see Figure 12).

Figure 12 - Entry Point for BPO Alert Reporting
2.4 Monitor the Data Transfer

The BPO alert transfer to BW is performed via the MAI which is using the Extractor Framework (EFWK). General information how the EFWK is working can be found in the documentation of Solution Manager – Extraction Framework.

For BPO Alert Reporting there the extractor E2E_ALM_EXTRACTOR is used, which can be monitored within the transaction SOLMAN_SETUP → Related Link “Solution Manager Administration” (see Figure 13). In the Solution Manager Administration window select “Infrastructure” (see Figure 14).

Figure 13 - Solution Manager Configuration entry screen
In the menu select Framework → Extractor Framework (see Figure 15). To find the extractor, show in the extractor overview table the filter line and enter in column Name “Alert Management Reporting”. The status of the extractor shall be green. If not, select the extractor and view the messages per extractor run and find out in which extractor phase the error occurred (see Figure 16).
Figure 16 - View the Status of the Alert Management Reporting Extractor
2.5 Housekeeping

The housekeeping is running fully automatic according to the twin cube concept. Find further specific information at the SAP Help Portal in section “Alert Management Reporting in SAP Solution Manager”.

The lifetimes, meaning how long the alert groups are stored in the MAI Infocubes, you can find in SOLMAN_SETUP in the “Technical Monitoring” → “2.5 Housekeeping” (see Figure 17).
3 Troubleshooting

When activating or working with the BPO Alert Reporting, you might face technical issues for which we want to provide you – according to our experience – a short description how to analyze them.

If you face technical issues which are not included in this chapter, please feel free to create an OSS message on component SV-SMG-MON-BPM, providing a detailed description of your issue.

NOTE: To speed up message processing make sure beforehand that you have installed the latest fixes.

3.1 Analyze Activation Issues

3.1.1 The BPO Alert Reporting Link Returns with an Error

Check if the service is working at all:
- Call transaction SE38
- Run Program /IWFND/SUTIL_SERVICE_TEST (see Figure 1)
- Enter External Service Name: SAP_BPM_ALREP_SRV
- Enter Version: 1
- Hit Execute

![Service Explorer](image_url)

Figure 18 – Service Explorer (Program /IWFND/SUTIL_SERVICE_TEST)
If the status code is OK, the service is running.
If the service is not running, check whether the BSP and the oData service are really active and the system alias is set correctly. Find the procedure in section 2.2.2 Manual BPO Alert Reporting Setup.

3.2 Analyze Browser Errors
Open the BPO Alert Reporting link with the recommended Google Chrome Browser and hit Ctrl+Shift+i.
Check whether any errors have been listed in the console. Identify whether the error is related to the oData Service or to the Java Script Files.

3.2.1 Identify and Debug oData Errors
How to identify:
After opening the console as described above, you might see in red text a loading resource error, where the server did not respond with 200 (OK). These are errors which occur within an ABAP routine in the SAP System, the oData service is calling with a specific link (see Figure 20).
To identify the root cause, you need to debug the ABAP routine.

3.2.1 Identify and Debug oData Errors
How to identify:
After opening the console as described above, you might see in red text a loading resource error, where the server did not respond with 200 (OK). These are errors which occur within an ABAP routine in the SAP System, the oData service is calling with a specific link (see Figure 20).
To identify the root cause, you need to debug the ABAP routine.
Right-click and open the link in a new window.
Analyze the link regarding service and method name.
For example:

- https://lda1sd7.wdf.sap.corp:44389/sap/opu/odata/sap/SAP_BPM_ALREP_SRV/AlertGroups/?$filter=context_guid%20eq%20'0050569A041A1EE2AAA0A6B6E4E99778%20and%20date_to%20eq%20'20140117%20and%20date_from%20eq%20'20140110%20and%20tableid%20eq%201

2) The service and method name SAP_BPM_ALREP_SRV/AlertGroups/
3) The calling filter parameters which will be evaluated in the method

   /?$filter=context_guid%20eq%20'0050569A041A1EE2AAA0A6B6E4E99778%20and%20date_to%20eq%20'20140117%20and%20date_from%20eq%20'20140110%20and%20tableid%20eq%201

This means the link is performing method ALERTGROUPS_GET_ENTITYSET of class CL_SAP_BPM_ALREP_DPC_EXT.

To debug, please enter transaction SE80 and set a breakpoint in
CL_SAP_BPM_ALREP_DPC_EXT→ALERTGROUPS_GET_ENTITYSET (see Figure 21).
Delete the cache and rerun the link, which you analyzed just now.
Debug the coding and see where the dump occurs.

Figure 21 – Set a Breakpoint in CL_SAP_BPM_ALREP_DPC_EXT→ALERTGROUPS_GET_ENTITYSET in Transaction SE80

NOTE: In the same way you can analyze performance issues and start a ST12 trace in order to see where the runtime is spent.
3.2.2 Identifying and Debugging Errors in Java Script Files

How to identify:
All other errors do not have this link as described in section 3.2.1, but describe a problem with a coding line (here: line 48 of the generic source file cs.js).

How to debug in the JS files:
Click on the coding reference (here: cs.js:48).
In the tab Sources this coding now has opened
Set a break-point by clicking on the left hand side of the line (see Figure 22).
Reload the page (Right-click → Empty Cache and Hard Reload).
Check the contents of the variables and debug step by step.

3.3 Performance Analysis

How to trace the performance:
Open the BPO Alert Reporting link with the recommended Google Crome Browser and hit Ctrl+Shift+I.
Reload the page (Right-click → Empty Cache and Hard Reload).
Open the tab Network to see,
• long running activities
• pending (=waiting) actions
• what is loaded new from the system or had been cached
If the oData routines (ABAP) have a long runtime (compare section 3.2.1), do an ST12 trace.
3.4 Data Analysis

How to identify:
You see entries for a managed object for the given time frame in cube 0SMALMMP1, but not in BPO Alert Reporting.

How to analyze:
Find out the MAI GUID in „Context Name Hash“.

- Transaction RSA1
- Right-Click on the Multi Provider 0SMALMMP1 → Display Data
- View the characteristic 0ALM_CTXHSH for the mentioned record

➔ Copy the MAI GUID

Find out the context for the managed object

- Open in Transaction SE80 method GET_WHERE_USED_BY_OBJECT_ID in class CL_AGS_BPM_RUNTIME_SERVICE
- Hit button Test/Execute
- For interface IF_AGS_BPM_RUNTIME_SERVICE click on “Edit interface view”
- Execute method GET_WHERE_USED_BY_OBJECT_ID
- Enter the MAI GUID in field IV_OBJECT_ID and hit execute (F8)

➔ Find in table ET_PARENT_CONTEXT- CONTEXT_NAME the context information where you shall find the managed object.
➔ Open in BPO Alert Reporting this context and see whether the data are displayed.