Business Process Monitoring on MAI with SAP Solution Manager SP12

Business Process Monitoring Set-up and User Guideline

July 2014

Version 1.0
INTRODUCTION

1.1 Business Process Monitoring (BPMon)

In order to ensure the successful operation of a company’s core business processes, SAP recommends implementing a ‘Run SAP like a Factory’ concept. One of the key aspects of the ‘Run SAP like a Factory’ concept is establishing an Operations Control Center (OCC). The OCC is a central IT support unit that proactively monitors the entire solution landscape via the use of automatic monitoring functions.

Business Process Monitoring is one of the key areas covered by the OCC. Within contains the observation of all business process specific key figures that are relevant for ensuring a smooth execution of a company’s core business processes (as opposed to technical monitoring that includes the monitoring of all system related key figures). This includes the observation of such areas as:

- Performance of specific steps within the business process execution
- Background processing specific to the business process (including single jobs and BW chains)
- Exceptions that occurred during the business process execution
- Data transfer via interfaces during the business process execution
- Throughput or backlog of business documents
- Consistency of data used in the business process execution (master data and transactional data)

Business Process Monitoring allows you to configure monitoring objects linked to your business process documentation. These objects are automatically evaluated according to your defined schedule, and in case of critical situations alerts are raised. This enables you to be informed as early as possible (potentially before the critical situation has interrupted the work of the end users), giving you more time to solve the critical situation before it impacts the execution of the business processes.

SAP Solution Manager gives you central access to documented error handling procedures for the alerts and access to analysis tools that help you analyze the alert situation on the managed system. This way, the OCC operators can execute error handling for simply, re-occurring alert situations without unnecessarily involving experts. In case of alerts that need to be forwarded to the next support level, incidents and alert notification emails can be created manually or automatically.

The tool set for Business Process Monitoring is completed by interactive BW based reporting functions, showing you the trend for alert occurrence and values measured during the monitoring. Additionally, dashboards for the alert information and measured values are available.

This document gives an overview on how to configure the various tools and functions for Business Process Monitoring in SAP Solution Manager.

1.1.1 Functional Scope of BPMon

As mentioned above, Business Process Monitoring in SAP Solution Manager provides alerting functions for all kinds of monitors that are specific for a business process execution. They include technical monitoring capabilities for background jobs, application logs, update errors, ABAP dumps, monitoring functions for the performance of dialog transactions and for all common SAP interface technologies. Additionally, BPMon provides a large number of application specific throughput, backlog and exception key figures for various SAP applications, but also key figures for monitoring non-ABAP and non-SAP systems.

While SAP Solution Manager contains the general BPMon infrastructure, the data collectors for BPMon are contained in the ST-PI and ST-A/PI add-ons on the managed systems. This means that the availability of a monitoring function not only depends on the SAP Solution Manager release, but also on the release of these add-ons on the managed systems.

The list of all available monitoring functions can be obtained via [http://www.service.sap.com/bpm](http://www.service.sap.com/bpm) Media Library → Overview and Demos → Business Process Operations Key Figures - Overview.

1.2 BPMon on Monitoring & Alerting Infrastructure (MAI)

In previous releases of SAP Solution Manager, only classic Business Process Monitoring (triggered by CCMS) was available. As of Solution Manager 7.1 SP12, Business Process Monitoring is also offered based on the Monitoring and Alerting Infrastructure (MAI).

BPMon on MAI allows you to:
Business Process Monitoring on MAI will replace classic Business Process Monitoring in the future. As of SAP Solution Manager 7.1 SP 12, SAP does not further develop the classic Business Process Monitoring, though it can still be configured and already activate monitoring configurations can be continued to be used. The decision whether to use BPMon on MAI is taken on solution level (via a flag in the BPMon Setup). It is possible to monitor solutions with BPMon on MAI and other solutions with classic BPMon in parallel. Solutions configured for classic Business Process Monitoring can be automatically migrated to BPMon on MAI via a migration report (see chapter 6 ‘Migration’).

Business Process Monitoring on MAI is available for managed systems as of basis release 7.0. For solutions containing managed systems with basis release 6.40 or lower, only classic Business Process Monitoring can be used.

Business Process Monitoring on MAI can be accessed via the ‘Business Process Operations (new)’ work center.

- Handle alerts easier in a unified alert inbox
- Integrate custom guided procedures with your monitoring objects to support error handling procedures which have to be performed repeatedly.
- Make use of improved capabilities such as reporting, self-monitoring, or notification mechanisms.
- Perform job, interface, and performance monitoring easier in an infrastructure shared with technical monitoring
- Reduce administration effort for customers by using a monitoring infrastructure shared with technical monitoring
2 PREREQUISITES FOR BUSINESS PROCESS MONITORING ON MAI

There are some technical prerequisites which have to be fulfilled before using the SAP Solution Manager for BPMon on MAI. The latest information in addition to this chapter you can find in SAP Note 1949245 (Prerequisites for Business Process Monitoring on MAI).

The technical prerequisites and the technical preparation (i.e. the content of chapters 2.1, 2.2 and 2.3) are covered by SOLMAN_SETUP. This means, if you do the activities in the views System Preparation, Basic Configuration, Managed System Configuration and Business Process Monitoring you have done all that is needed or you have verified, that everything is done. However, as SOLMAN_SETUP supports all scenarios, it contains steps that are not necessary for BPMon.

2.1 Required Software Components and Releases

This Setup Guide explains the functionalities of BPMon on MAI which are part of the SAP Solution Manager 7.1 Support Package Stack 12 and ST-A/PI 01R. The ST-A/PI add-on needs to be available on SAP Solution Manager as well as on the managed systems.

For BPMon on MAI all data collection accesses the managed system via ST-PI. Therefore, at least ST-PI SP10 must be available on the managed system. Additionally, only managed systems of basis release 7.0 or higher can be monitored via BPMon on MAI. For managed systems of release 6.40 or lower, you have to use the classical BPMon.

For the latest information regarding software requirements (Support Packages and SAP Notes) please refer to SAP Note 521820 (Availability of Business Process Monitoring).

The corresponding step in SOLMAN_SETUP is in scenario ‘Business Process Monitoring’ ➔ Step 1.1 ‘Configure Automatically’

2.2 Roles and Authorizations

In order to configure Business Process Monitoring on MAI, you need a dialog user in the productive BPMon client on SAP Solution Manager with sufficient roles assigned to access the new BPO work center (SAP_SMWORK_BPO) and to configure BPMon (role SAP_BP_OPERATIONS_ADMIN_COMP).


On the managed system, you require a user with role SAP_MANAGED_BPOANA_ALL. If a trusted RFC connection is used from the SAP Solution Manager to the managed system, your user additionally needs role SAP_SM_S_RFCACL assigned in the managed system.

The corresponding step in SOLMAN_SETUP is in scenario ‘Business Process Monitoring’ ➔ Step 1.3 ‘Create Template Users’.

2.3 Managed System Setup in SAP Solution Manager

The managed system setup takes care of the creation of the correct RFC destinations and logical components for the managed systems in SAP Solution Manager. For Business Process Monitoring on MAI, the logical components for the managed systems must have been migrated to the LMDB. The following RFC destinations are used for BPMon on MAI:

- RFC destination for Change Manager (usually called SM_<SID>CLNT<Client>_TMW), used during activation and for data collection.
- RFC destination for Solution Manager (usually called SM_<SID>CLNT<Client>_TRUSTED RFC), used for dialog logon to managed system.

The relevant step in SOLMAN_SETUP is included in scenario ‘Managed Systems Configuration’.

Note: The local RFC destination BPM_LOCAL_<client> is no longer needed for BPMon on MAI.

2.4 Solution in Solution Directory

Similar to the prerequisites for classic BPMon, for BPMon on MAI you need a solution maintained in Solution Manager with logical components assigned. Business processes, steps and interfaces need to be configured
within your solution. After the creation of these processes the monitoring objects can be assigned to the relevant business process steps, interfaces or to the business process itself.

You can either create a new solution or use an already existing solution for the setup of BPMon. The authorization concept in BPMon is per solution and function (configure BPMon and display BPMon alerts). It is not possible to limit authorizations for BPMon within a solution. In general we recommend creating as few solutions as possible.

For details on how to create a solution and how to configure business processes in a solution, please see the SAP help. For BPMon on MAI, the leading role of the solution determines on which systems within the logical components will be executed. This means that normally a test system and a productive system cannot be monitored in the same solution. Observe that the leading role of the solution can only be changed for empty solutions.

Assign Logical Component

Additionally, you need to have business processes, steps and interfaces configured within your solution.

Example: Business Process ‘Order to Cash’

2.5 MAI Flag in BPMon Setup

You can decide per solution whether to use BPMon on MAI or classic BPMon. In order to use BPMon on MAI, you need to set the flag ‘Monitoring using MAI’ in the BPMon Setup for the solution.

For more information on the MAI flag refer to chapter 3.2 ‘Enabling Monitoring via MAI’.
3 BUSINESS PROCESS MONITORING SETUP

Business Process Monitoring is set up via a BPMon setup/configuration tool. With the Setup Tool you can configure monitoring objects and assign them to business process steps or business interfaces of a solution.

3.1 Accessing the BPMon Setup Tool


Note: Both the old and the new Business Process Operations work center can be used for accessing the BPMon Setup.

3.2 Enabling Monitoring via MAI

In order to use BPMon on MAI, you need to set the flag ‘Monitoring using MAI’ in the BPMon Setup in the node for the solution. This flag can only be set for a solution that does not contain any monitoring objects.
If this flag cannot be changed, this means that your solution already contains monitoring objects.
If you would like to move a solution from classic BPMon to BPMon on MAI, you have to migrate the solution.
For details, please see chapter 6 ‘Migration’.

Also, on the solution level you can maintain the ‘Solution Rating Hierarchy’. The rating hierarchy controls the way how an alert rating is propagated from a monitoring object level via the step or interface up to the business process level.

Note: The setting ‘RFC Server Group for BPMon’ is only used for classical BPMon and not relevant for MAI solutions.

3.3 Load Monitor Definitions
The majority of monitor definitions and data collectors in BPMon are delivered via the ST-A/PI add-on on the managed systems. To make these monitors available in the SAP Solution Manager, the monitor definitions need to be transferred from the managed system to a central repository in the SAP Solution Manager system.

You can load or update monitors from the different managed systems in node ‘Logical Components’ via the button ‘Load Monitor Definitions’. After the update process, you can see the status under the column ‘Last Monitor Definitions Reload’.

A reload of the monitors is required in following cases:
- ST-A/PI version was updated on the managed system(s)
- ST-A/PI SP was updated on the managed system(s)
- New Monitoring objects via customer exit have been developed and transported to the managed system

The reload of the monitor definitions is cross-solution, so reloading the monitor definition for a system makes these updated monitor definitions available in all solutions containing that managed system. For this reason, the step for the re-load of monitor definitions is also contained in the transaction SOLMAN_SETUP in panel area ‘Business Process Monitoring’.

Please observe that some monitor definitions are stored locally on SAP Solution Manager (e.g. the master collector PI monitoring). Therefore, the load of monitor definitions for the SAP Solution Manager itself should always be executed. If the SAP Solution Manager system is not part of your solution, execute the reload via SOLMAN_SETUP.
There are also monitor definitions and data collectors contained in the ST-PI add-on on the managed system. For these, no reload is required.

3.4 Create Monitoring Object

Alerts are generated based on the configuration maintained for a monitoring object. Creation of a monitoring object in MAI is similar to the creation process in classical BPMon.

Configuring a monitoring object will be explained in this chapter by means of a cross application monitor key figure ‘ABAP Dumps’. The alerting will be set up at the business process step. Monitoring object can be created via the ‘Add’ button.

The next step is to choose an area that you want to monitor and the monitor itself in the pop-up screen ‘Add Monitoring Object’.

- The ‘Application Areas’ and ‘Cross Application’ areas are listed under the ‘Filter Criteria.’ According to the pre-selected area the dropdown list for the available ‘Monitor’ is filtered. In our example, we will select as ‘Cross Application’ area the ‘Cross Application’ area and as ‘Monitor’ the ‘ABAP Dumps’ monitor.

- It is required to specify a Name for the monitoring object. By default, ‘Name’ is filled with the name of the chosen monitor.

- After the selection has been made, selecting ‘OK’ creates the monitoring object with an ‘Initial’ status.
3.5 Configure Monitoring Object

For the configuration of a monitoring object click on the hyperlink as displayed below.

This link leads you to the configuration screen of the monitoring object, where you can maintain all detailed settings, e.g. select the relevant key figures, maintain the schedule for the data collection, and configure the notifications and so on.

3.5.1 Key Figure Selection

Under the ‘Monitoring Configuration’ tab for the selected key figure, the selection criteria and thresholds can be maintained in the section ‘Parameter Sets for Key Figure’. Additional counters can be added by using the Add button.
The minimum requirement is to select at least one key figure, maintain the thresholds and the mandatory fields in the selection criteria (wildcards '*' can be used). Please note that you have online help for the monitor (via link 'Display Help for Monitor') and for the key figure (via link 'Display Help for Key Figure') available.

### 3.5.2 Monitoring Schedule

Under the 'Monitoring Schedule' tab, all the necessary data regarding the collector start time and the periodicity of the data collection can be maintained. Observe that what kind of schedule can be maintained here depends on the involved monitoring function. For most monitors, the tab 'Monitoring Schedule' looks like in the example below. You can maintain the following information:

- **Schedule Type**: Here you can choose the kind of the schedule. Based on the selection, the relevant fields have to be maintained.

- **Simple Schedule** will enable you to maintain the weekly schedule to indicate the relevant days of the week when the data collectors should run. If not explicitly specified, weekdays Monday to Friday are set automatically. In addition to the days of the week on which the data collector should run, you also have to maintain the start time and the period for the data collection in area 'Further Settings'.
Extended Schedule will enable you to use a factory calendar for scheduling a data collection that is supposed to run less frequent or only at specific days in a month.

- Flag ‘Refer to Factory Calendar on Managed System’ to specify that the ‘Factory Calendar’ is located in the remote system. Maintain the ‘Factory Calendar’ field.
- ‘Work Day’: Specify the working day on which data evaluation has to take place. If you choose ‘All working days’, the fields for the ‘First Month’ and the ‘Period [Months]’ do not have to be maintained.
- ‘First Month’: Specify the first month to be taken into account when calculating the monitoring schedule. The initial value is the current month.
- ‘Period [Months]’: Specify the time period (in months) required for calculating the monitoring schedule. If not explicitly specified, a period of one month is used. You still have to define the start time of the data collector and can provide a period for the data collection during the day in area ‘Further Settings’.
Regardless of how you schedule the data collection, you can select to have the data collection executed in background in area ‘Further Settings’. This means that instead of executing the data collection directly via RFC from Solution Manager, the data collection is executed via a background job BPM_DATA_COLLECTION on the managed system. In general, data collections taking more than a few seconds should be executed in background.

### 3.5.3 Alert Handling

Under the ‘Alert Handling’ tab information text, URLs, reports and transactions to be used for analyzing and handling the alert can be maintained. The custom text, transactions and the URLs maintained here will be accessible in the Alert Inbox and will be included in the notification.

Some monitoring objects come with a default analysis transaction that can be used for analyzing the alert situation on the managed system. These analysis transactions can be accessed via a guided procedure. Additionally, you can assign your own guided procedure containing steps to be followed to close the alert.

### 3.5.4 Notification

To enable automatic notification sending, set ‘Automatic Notification’ to Active and maintain the notification settings under the ‘Notification’ tab.

A user in the SAP Solution Manager system is needed as the ‘Sender’ of the alerts who has assigned a valid e-mail address in its user profile (SU01). Typically, BPMon user SM_BPMO should be used for that purpose. If auto-notification is active, ‘Recipients/Recipient Lists’ need to be maintained.
3.5.5 Incident
To enable automatic creation of incidents, set ‘Automatic Incident Creation’ to Active and maintain the incident settings under the ‘Incident’ tab.
3.5.6 Third-Party Connectors
Under the ‘Third-Party Connector’ tab the notification and the incident specific BADIs can be assigned to the monitoring object.

3.5.7 Further Settings
Alert specific settings such as the alert category, BW aggregation, alert text language and the retention time can be maintained under the tab ‘Further Settings’.

- Alerts can be segregated into different categories by specifying a BP Operations Area and can be used as an additional filter criteria in the BPO work center for accessing the alerts.
- ‘BW Granularity’ can be set to control the granularity and the lifetime of the data stored in BW.
- The alert message language can be maintained under ‘Metric Text Language’.
- ‘Data Retention Time [days]’ determines how long the metric information is retained in the system for observation.
- ‘Log Messages Language’ is used to determine the language of the log messages (for application log and due list log monitoring).

3.6 Generate and Activate Monitoring Object
After maintaining the monitoring object configuration, ‘Save’ the settings and use the ‘Generate and Activate’ button to activate the object and receive alerts. You can also use the separate buttons ‘Generate’ and ‘Activate’ to execute the activities. Note that when you activate the monitoring configuration, the last version of the generated configuration is activated. If you have changed the monitoring configuration of an object, the changes will only become relevant for the activation after you have generated the configuration.
During the generation of the configuration, the setup will be checked for plausibility and transferred into Solution Manager DB tables for later use.

When a monitoring object is activated, the monitoring configuration is transferred to the managed system and the data collection for the monitoring object is activated based on the maintained time schedule. Depending on the configuration of the monitoring object, it may take some time until the alerts are available in the alert inbox.

Note: The generation and activation of a monitoring object can also be triggered from the nodes for the business process, business process step, logical component and from the monitoring object list.

After the generation and activation, protocol messages as well as the warnings and errors during the activation process are displayed in the message area as shown in the screenshot now visible.

The activated monitoring objects can be deactivated via the button ‘Deactivate’ which is displayed for active monitoring objects. The data collection of the monitoring object will be stopped. Similar to generation and activation, deactivation can also be triggered from the nodes for the business process, business process step, logical component and from the monitoring object list.

After the deactivation, protocol messages as well as the warnings and errors during deactivation process are displayed in the message area as shown in the screenshot. If the deactivation of the monitoring object was successful then the ‘Activate’ button is now visible.
Note: The deactivation of a monitoring object can also be triggered from the nodes for the business process, business process step, logical component and from the monitoring object list.

⚠️ The actual customizing can be changed at any point in time. If there is already an active monitoring, the changes will have no effect on the current monitoring. To activate the new monitoring configuration, the monitoring object must be deactivated, generated and activated again.
4 ALERT HANDLING

Alerts for BPMon on MAI can be displayed via the work center ‘Business Process Operations (New)’.

Note: The BPMon Setup can be accessed from both work centers. But the handling of alerts is only possible in one work center:

- For solutions with BPMon on MAI via the work center ‘Business Process Operations (New)’
- For solutions with classical BPMon via the work center ‘Business Process Operations’.

The concept of alerts in MAI differs from the classical BPMon. The terminology in MAI is as follows:

**Metric:** In classical BPMon, every data collection run resulted in an Alert. In MAI this is referred to as Metric.

- It is something to be measured on the managed system
- Measured value or the metric value of the metric is supplied by the data provider
- In BPMon on MAI, the data providers also supply the rating for the metric, although in general in MAI metrics do not need to have ratings

**Event:** Raised by the event calculation engine based on the rating of one or more metrics and based on other events, e.g. you could raise an event if two metrics are rated red at the same time. Currently, in BPMon the flexibility in MAI provided via events is not used.

**Alert:** Raised by the Alert Consumer Connector based on one or more events and based on whether an open alert already exists’.

**Alert Group:** In MAI, alerts for a managed object that logically form one unit are collected into alert groups. This way it is ensured that “new” critical situations can be differentiated from “already alerted” critical situations. Consecutive alerts of the same rating are stored in one alert group. Only changes in the rating create a new alert group. Alert groups are created per managed object. In BPMon, that means that in most cases, alerts for different key figures configured in one monitoring object are grouped together (i.e. there are no separate alert groups per key figure).

Monitoring Information for BPMon on MAI can be displayed via

- Alert Inbox to display alerts. This gives you a work list of the events requiring your interaction.
- BPMon Application to display metrics. This gives you an overall overview about the status of your business processes.
4.1 Alert Inbox for BPMon on MAI

In the alert inbox you can see only real alerts

- Green alerts are not real alerts and are not displayed in the alert inbox
- Grey alert icons usually indicate that there was no data collection yet for the monitoring object or that no relevant data for the evaluation was found. They are also not displayed in the alert inbox.

The alerts are segregated into different queries based on the Business Process Operations Area assigned to the monitor in the BPMon setup.

- Throughput & Backlog
- Job (containing all job alerts)
- Interface (containing all interface channel alerts)
- Consistency (containing all consistency alerts)
- Exceptions (containing all exceptions that are not part of jobs, interfaces or inconsistencies)
- Performance (containing performance alerts that are not part of jobs or interfaces)

The Alert Inbox consists of the four sub-screens:

- Filter Area
- Alert Types List
- Business Context
- Alert Groups List

Additionally, you can access the BPMon Alert reporting from the alert inbox via button ‘Reporting’.
4.1.1 Filter Area
When entering the Alert Inbox, the alert situation will be displayed for the Monitoring Objects and Alert Types matching the filter criteria.

If you have created your own queries, sometimes it can be necessary to use report POWL_D01 to clean up the POWL Cache. This report deletes derived/ user defined POWL Queries from the cache based on Application ID and/ or User. Execute this report for your user (unflag field “DISPLAY”) if you are experiencing problems with the queries during testing.

4.1.2 Alert Types List
According to the filter criteria set in the Filter Area you will get the alert information displayed in the Alert Types List.

For each managed object you can see:
• Current Rating
• Worst Rating (of all unconfirmed alert groups)
• Time Stamp for last Change (time stamp of the last collector run)

4.1.3 Business Context
The Business Context area displays business process related context information for the selected alert type. This includes the Solution, Scenario, Business Process, Step or Interface, and SID for the selected Alert Type.

Note: In general, managed objects in MAI are independent of solutions. For Business Process Monitoring this means that if a solution is copied, the configured monitoring objects are not copied, but a reference to the already existing MAI objects is created. Therefore, Business Process Monitoring objects in MAI can belong to more than one solution.

The graphical overview of the monitoring status for the selected business process can be launched via the ‘Business Process Monitoring’ button.
Navigation to different graphical views such as all processes/interfaces is possible via options available in the dropdown list.

The current and the worst rating are displayed for each business process step.

System specific alert graphics for Availability, Performance, Configuration and Exception (from System Monitoring) can be accessed by selecting the respective rating indicators.

4.1.4 Alert Group List

Depending on the Alert Type selected in the Alert Types List, you will get a list of all corresponding alert groups. For further processing you can select a line for a specific Alert Type in the list.

a) You can confirm alert groups by selecting specific or all alert groups via the ‘Confirm’ button. Confirming all alerts in an alert group closes the alert group. New alerts of the same rating create a new alert group (e.g. triggering a new notification). The reason for closing the alert group and the metrics that are part of this group can be seen in the alert details.
b) You can assign a processor to an alert group via the ‘Assign’ button.

c) You can create an incident or a notification via the ‘Create Incident’, ‘Create Notification’ buttons.

d) The alert details can be accessed via ‘Show Details’.

In the alert details you can see the metrics relevant for the alert, including the measured values for each metric and the start time and end time for the alert group, including the reason for the closure of the alert group (see option 1 in figure below).

The custom text and the analysis tools assigned to the monitoring object are displayed under ‘Alert Description and Analysis’ (see option 2 in figure above).

If you select the counter all the metrics collected within the alert group are listed along with the measured value (see option 3 in figure above).

You can access the Metric Monitoring from the Alert Inbox from within the alert details (see option 4 in figure above). The Metric Monitoring is a MAI function that allows you to display the trend for the measured value within the alert group.
For monitoring functions that have a detail info list available, the link to the detail info list on the managed system is accessible in section ‘Metric Description’ (see option 5 in figure above).

The configuration of the managed object (BPMon Setup) can be accessed using ‘Change Configuration’ (see option 6 in figure above).

### 4.2 Monitoring Application for BPMon on MAI

The ‘Business Process Monitoring’ application is a new work center option available with SP12. In the BPMon Application you can see all metrics collected for a solution/business scenario/business process. This means you can also see green and grey metrics.

The Alert Inbox consists of the four sub-screens:
- **Filter Area**
- **Business Process Overview**
- **Details of Business Process**
- **Details of Monitoring Objects and Key Figures**

#### 4.2.1 Filter Area

When entering the Monitoring Application for BPMon you can filter for your solution/scenario/process (accessible via ‘Show Quick Criteria Maintenance’).

#### 4.2.2 Business Process Overview

Every BP Operations area is rated separately for each business process. Via ‘Process Graphic’ the graphical monitoring overview of the business processes for the solution can be displayed.

Select a business process to display details for the business process steps.
4.2.3 Details of Business Process

Every business process step is individually rated for each Business Process Operations area. The hyperlink for alert number provides access to the alert inbox.

Select a business process step to display a list of metrics for the step.

4.2.4 Details of Monitoring Objects and Key Figures

The icon for the trend provides access to the Metric Monitoring.

The hyperlink for measured value provides access to the detail info on the managed system.
5 MONITORING USE CASES

5.1 Monitors in the Application Monitoring Framework
Monitors shipped with the ST-A/PI add-on of the managed system are part of the Application Monitoring framework. To make these monitors available in the SAP Solution Manager, the monitor definitions need to be transferred from the managed system to a central repository in the SAP Solution Manager system.

For further information on the load of monitor definitions please refer to chapter 3.3 ‘Load Monitor Definitions’.

The application monitoring framework provides the following main features:
1. a flexible configuration of monitoring objects, i.e. the possibility to specify selection criteria.
2. a highly flexible data collector scheduling. For further information on the scheduling possibilities refer to chapter 3.5.2 ‘Monitoring Schedule’.
3. a Detail List showing the result of the last data collection, i.e. the list of the identified critical documents.
4. a framework that is open for easy implementation of customer defined monitors.

Monitors in the Application Monitoring Framework are available in many different application areas and cross-application areas when creating a monitoring object.

5.2 Monitors in the ST-PI Framework
Monitors in the ST-PI framework are contained in the ST-PI add-on on the managed system. For these, no reload is required. The following monitors are delivered via the ST-PI: Background Job Monitoring, Application Log, Due List Log, Update Error, Document Volume, CCMS, CCMS based Performance Monitoring.

The main difference between these monitors and the application monitors is the setup of the monitoring schedule which will be described as follows. For application monitors you can define a complex time schedule in BPMon Setup defining when the data collector for this monitoring object should run. For monitors in the ST-PI framework, the data collection period cannot be changed for the following monitoring types:
- Update Error (every 5 minutes)
- Document Volume (every 60 minutes)
- CCMS Monitor (every 5 minutes)
- CCMS based Performance Monitor (Dialog Performance) (every 5 minutes)

A period, but no complex monitoring schedule) can be specified for the following monitoring use cases:
- For monitoring Background Processing (Simple Jobs, BW Process Chains) you can distinguish between ‘critical’ and ‘non-critical’ jobs. By default, the data collection for critical jobs is every 5 minutes and for non-critical jobs, the data collection is every 60 minutes.
- For monitoring the Application Log and Due List Log, you can define a suitable time period for the corresponding monitoring data collector. By default, the data collection period is every 60 minutes.

5.2.1 Application Log Monitoring
The Application Log (transaction SLG1) provides an infrastructure for collecting messages that were raised during the processing of the business processes, saving them in the database and displaying them as a log.

The application log monitor provided via the ST-PI provides you with a function to automatically alert on the number of messages in a specific application log, the occurrence of critical messages in the log or the content (payload) of these messages. The messages in the application log can be aggregated per log, per hour or per day. The data collection period is defined per monitoring object, independently of the message aggregation and is by default ‘every hour’.

The application log monitor is available in area ‘Cross Application’ → ‘Application Log’ in the creation screen for a monitoring object.

5.2.2 Due List Log Monitoring
A due list is a list of documents that are due for further processing. The due list allows the mass processing of these documents. During the mass processing a log is written, containing, amongst others, the list of
created documents and the exceptions that occurred. The due list log monitor allows the automatic alerting
for these messages and allows to check whether documents were created by the due list run.

There are different types of due lists in an SAP ERP system of which the following three are most important
and are covered by the due list log monitor: Delivery (L), Billing (F) and Picking (K). The delivery due list can
be directly accessed via transaction V_SA, the billing due list via transaction V.21.

The due list log monitor is available under area ‘Cross Application’ ➔ ‘Cross Application’ in the creation
screen for a monitoring object.

You can define a suitable time period for the corresponding monitoring data collector. By default, the data
collection period is ‘every hour’.

5.2.3 Update Error Monitoring
During dialog processing of a document, the actual changes to the database are often written
asynchronously (via an update work process). If the processing of the update request fails, the respective
update record reaches an error status and the data is not saved to the application tables. This means that
the respective business documents are not created on the database and the respective business process
instance is stopped until error handling for the update error is executed. Therefore, the update error
monitoring provides alerting functions for update errors that occurred for specific transactions.

The update error monitor is based on the CCMS of the managed system, so the CCMS on the managed
system should have sufficient space for the MTE and the alert creation.

The data collection time period is set to ‘every 5 minutes’ and cannot be changed.

The update error monitor is available under ‘Cross Application’ ➔ ‘Update Errors’ in the creation screen for
the monitoring object.

5.2.4 Document Volume Monitoring
Amongst the application specific monitors there are several throughput monitors that allow you to alert on the
throughput of specific business documents. In case you request to see the number of documents created
that are not covered by these application monitors, you can use the Document Volume monitor to alert on
the number of update, insertion, or deletion operations on single tables. The alert determination is based on
the table call statistics (transaction ST10).

There are two types of alerts available: In the first one, ‘MaxRecordsAffected’, a number of operations is
defined which should not be exceeded, e.g. there shouldn’t be more than 10 deletions on table VBAK per
day. The second one, minimum records, defines a number of table operations that should be at least
performed.

Even though the general data collection for document volume is every 60 minutes and cannot be changed,
you also need to provide a time at which alert should be checked (‘Check Time’) and the respective days
must be flagged to specify the days when the alert should be checked.
The document volume monitor is available in area ‘Cross Application’ Æ ‘Document Volume’ in the creation screen for the monitoring object.

5.2.5 CCMS Monitoring
With this monitoring type it is possible to assign any CCMS monitoring tree element (MTE) to a Business Process Step or Interface. The alert determination is then taken care of by the MTE itself. Business Process Monitoring simply displays the alerts that have occurred in the local CCMS.

The MTE needs to be already available and a topology entry for system containing the MTE needs to be available in transaction RZ21 on SAP Solution Manager.

The data collection time period is set to ‘every 5 minutes’ and cannot be changed.

The CCMS monitor is available under area ‘Cross Application’ Æ ‘CCMS Monitor’ in the creation screen for the monitoring object.

5.2.6 CCMS based Performance Monitoring
With the monitor Dialog Performance the dialog performance of transactions can be monitored and differentiated by SAP instance, based on the statistical records (transaction STAD) in the SAP system. Activating a CCMS based performance monitoring object will create an MTE in the CCMS of the managed system. The data collection is then taken care of by the MTE by itself. Business Process Monitoring simply displays the alerts that have occurred in the local CCMS.

The data collection time period is set to ‘every 5 minutes’ and cannot be changed.

The CCMS based performance monitor is available under ‘Cross Application’ Æ ‘Dialog Performance’. Please note that for this monitoring function a more advanced data collector is available in the application monitoring framework. This monitor is available under ‘Cross Application’ Æ ‘Cross Application’.

5.3 Alerting on Analytics
If analytical data is already available in the BW of SAP Solution Manager you can reduce the workload regarding data collection from backend systems by alerting on the analytical data. Additionally alerting on Analytics provides you an option to separate your alerts per organizational unit without having to configure individual monitoring object for each organizational unit.

5.3.1 Create Analytics object
The setup of data collection for analytics objects is executed in the Business Process Monitoring Setup. In contrast to the setup BPMon alerting objects, the setup for analytics objects is not performed for a business process step but for a specific system.
To make the monitors available in the SAP Solution Manager, the monitor definitions need to have been transferred from the managed system. For further information on the load of monitor definitions please refer to chapter 3.3 ‘Load Monitor Definitions’.

After that, in the BPMon Setup go to the node of the logical component containing the system for which you want to set up the analytics object.

Next, the monitoring object for the corresponding logical component (e.g. Sales Documents Items) can be created. Select ‘Add’ in order to add a monitoring object to the logical component.

The next step is to choose an area that you want to monitor and the monitor itself in the pop-up screen ‘Add Monitoring Object’ (similar to the setup of the monitoring object for alerting) and to confirm the popup.
In tab ‘Monitoring Objects’ the newly created monitoring object is now visible. To define the scope and schedule for the monitoring object, select the hyperlink for the relevant Monitoring Object. In the ‘Edit Monitoring Object’ screen, configure, generate and activate the analytics objects.

In order to easily identify which of the objects displayed in the list of monitoring objects for a logical component are analytics objects, use the column ‘Flavour’. To add this column to the list use the ‘Settings’ button, then under ‘Column Selection’ add ‘Flavour’ to the displayed columns.
Notice that even though in general the setup for analytics objects is very similar to the setup of alerting objects, for analytics objects thresholds cannot be maintained and notifications cannot be configured. For some of the selection criteria, a so-called group-by option is available. For parameters with group-by set it is possible to differentiate in Business Process Analytics (e.g. if group-by flag for ‘Sales Org’ is set, you can differentiate the values per sales org in Business Process Analytics). At least one group by flag should be selected.
Please note that if you set a group-by field here, this will also influence the alerting on the analytics data. For an alerting object referencing to an analytics object the selection is only available for fields which are flagged as group-by field in the analytics object.

After the Generation/Activation of the analytics object, the BW Master Data should be loaded in node ‘Logical Components’. This mode shows an overview of so called Semantic ID’s that contain the master data for the dimensions that have been selected for analysis. In the field ‘Load Status’, you can see if Master Data has been loaded. In the field ‘Date’ of ‘Last Monitor Definitions Reload’, you see how current the master data in BW is. If the status is ‘Not Loaded’ or ‘Scheduled’ or if the Master Data is too old, you should load the master data by selecting the line containing the logical component and selecting ‘Load BW Master Data’. In the pop-up, select the Semantic ID’s you want to load and select ‘Load BW Master Data’.

5.3.2 Create BPMon object with reference to Analytics object

Access the BPMon Setup via the ‘Business Process Operations (new)’ work center and start the BPMon setup within the node of business scenarios, select first the relevant business process, then the relevant business process step(s).

Select ‘Add’ in order to add a monitoring object to the business process step. See chapter 3.4 ‘Create Monitoring Object’ for details. From here, select the application area for the corresponding monitoring object (e.g. Sales &Services), then select a monitoring object which is already defined on the level of the logical component, press ok. The available monitoring objects for BW data are shown and can be selected. You will be asked if you want to create a reference. Highlight the relevant BPMon Analytics object and select ‘Yes’ to confirm. The new monitoring object will be added to your process step.
The newly created monitoring object will then appear in the Monitoring Objects tab. The parent monitoring object is visible in the Details section.

In the ‘Edit Monitoring Object’ screen for the selected monitoring object, all available key figures can be selected. Please select only those key figures for alerting which you have a data collection has been configured for the corresponding analytics object, otherwise no data will be available in the BW Info Cube and hence the alert status of this monitoring object will remain grey – which means undefined.

The alerting based on BW data will be executed right after the data collection for the referenced analytics object is finished, so you cannot maintain an additional monitoring schedule here.

A counter per key figure must be defined next. Maintain the parameter set (counter). Here, additional restrictions for several fields can be made. Please note that only for the fields that have group-by set in the parent analytics object selection is considered during the data collection (e.g. if you want to setup alerting for a certain sales org, the group-by flag for ‘Sales Org’ needs to be set in the analytics object). Additionally, the group-by flag in the alerting object will only be considered for fields with ‘Group-by’ set in the parent analytics object. Setting the group-by flag in the alerting object will then allow you to separate the alert per this field. (E.g. if you set the flag for group-for sales organization, you will get individual alerts per each different sales organization found during the data collection.)

After the parameters are maintained, define the appropriate threshold values.
To finalize the monitoring configuration, save the data, generate and activate the monitoring object.

5.4 Unified Use Cases
In the past there have been some data collectors in Business Process Monitoring and in Technical Monitoring covering similar monitoring functions. These common monitoring functions have now been unified with Business Process Monitoring on MAI, meaning that the same data providers are used from Business Process Monitoring and Technical Monitoring and that these monitoring functions can be set up and used either from BPMon or Technical Monitoring.

Currently, there are two unified use cases:
- Background Job Monitoring
- Interface Channel Monitoring

To enable a unified setup of the monitoring functions, the setup UI has been adjusted so that the setup looks similar regardless if these functions are set up within BPMon or technical Monitoring.

For both use cases there is no difference in the alerting between BPMon and Technical Monitoring.

The following chapters should give you a short overview about the UIs for setting up these monitoring functions. Detailed information on how to set up these functions will be provided in separate guides.

5.4.1 Background Job Monitoring
Background Jobs and BW process chains (header/elements) can be monitored via MAI with SP12.

In order to create a job monitoring object, choose area ‘Cross Application’ → ‘Background Processing’ in the creation screen for the monitoring object.
The job monitoring configuration UI leads you through the configuration via a Guided Procedure.

All job monitoring objects created for the managed system (regardless if from BPMon or Technical Monitoring) are available for configuration within the BPMon setup under ‘Monitored Objects’. An already existing job monitoring object can be assigned to a step to include it in BPMon for your solution.

You can distinguish between ‘critical’ and ‘non-critical’ jobs. By default, the data collection for critical jobs is ‘5 minutes’ and for non-critical jobs the data collection is ‘1 Hour’.
Once the job is chosen, configure alerting by flagging the relevant key figures. Maintain the thresholds for the chosen key figures and generate and activate the monitoring object.

5.4.2 Interface Channel Monitoring

All the interfaces technologies, such as IDOCs, BDOCs, qRFC, tRFC etc., can be monitored via Interface Channel Monitoring.

In order to create an interface channel monitoring object, choose area ‘Cross Application’ → ‘Interface Channel’ in the creation screen for the monitoring object.
The interface channel monitoring configuration UI leads you through the configuration via a guided procedure.

All the relevant interface channels created via BPMon and technical monitoring can be listed and can be assigned to a business process step.

Save the configuration and select ‘Continue’ to proceed with the activation of the monitoring object.

5.5 Customer Exit
You can use the application monitoring framework to create your own monitors while using all advantages of the technical framework:

a) You can set up customer specific monitors in the same way as other application data collectors (including all features, e.g. notifications, analysis tools, …) in the BPMon Setup

b) You can provide access to the Detail List showing the results of the last data collection run, so that the person handling the alert can directly navigate from the Alert List to the list of documents for which the alert was created.

6 MIGRATION

MAI is the future platform for all monitoring and alerting capabilities provided with SAP Solution Manager. With SAP Solution Manager 7.1 SP12 the use of MAI is optional. You can run MAI-monitored and classical BPMon solutions in parallel. If you want to switch a solution, for which you have configured classic BPMon to BPMon on MAI, you have to migrate the solution.

Software requirements for the migration to BPMon on MAI is that SAP Solution Manager 7.1 is on SP12, that all monitored systems are on basis release 7.0 or higher and that the add-ons ST-PI 2008_1_700 SP10 or higher and ST-A/PI 01R_700 or higher are installed on the managed systems.

To migrate a solution, proceed as follows:

- Copy the solution
- Migrate new solution using report R_AGS_BPM_MIGRATE_TO_MAI
- Activate monitoring in the new, MAI-based solution
- Deactivate monitoring in the original, classic solution
- Deactivate and delete the original solution

Detailed information about the migration procedure can be found in SAP Note 2010999.