SAP Standard for Business Process Monitoring
SAP Solution Manager 7.2

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DOCUMENT HISTORY

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<td><strong>EXAMPLE</strong></td>
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<td><strong>Example</strong></td>
<td>Output on the screen. This includes file and directory names and their paths, messages, names of variables and parameters, source text, and names of installation, upgrade and database tools.</td>
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<td><strong>EXAMPLE</strong></td>
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1 SAP STANDARDS FOR END-TO-END SOLUTION OPERATIONS

IT organizations face new challenges every day as they attempt to remain effective and future safe while also keeping costs for day-to-day operations as low as possible. They are also being challenged more than ever to demonstrate their value to the business. Therefore, it is important to optimize the day-to-day tasks that appear to have less obvious business value and to use KPI and benchmark-based reporting to make IT processes more visible, demonstrating the real value that IT can provide.

In order to minimize the costs of IT, it is necessary to standardize and automate the end-to-end IT processes without reducing the SLAs required by the business, such as stability, availability, performance, process and data transparency, data consistency, IT process compliance, and so on.

Based on the experience gained by SAP Digital Business Services (DBS) while serving more than 36,000 customers, SAP has defined process standards and best practices to help customers set up and run end-to-end solution operations for their SAP-centric solutions.

The Build phase of SAP best practices supports a Build SAP Like a Factory approach, consisting of the following processes:

- Custom code management
- Change, test, and release management
- Incident, problem, and request management
- Solution documentation

During the Run phase of a solution, adapting your IT infrastructure to a Run SAP Like a Factory operation impacts both application operations and business process operations. Therefore, operations processes, such as end-to-end root-cause analysis, system monitoring, system administration, and data volume management need to be optimized to achieve state-of-the-art application operations. In business process operations, the same applies to business process and interface monitoring (including performance optimization), data consistency management, and job management.

Quality management processes and tasks need to be established throughout the lifecycle to guarantee continuous improvement of the end-to-end solution operations processes while simultaneously ensuring the flexibility needed to react to changing requirements.
The figure 1 shows an organizational model for solution operations that aligns SAP best practice topics and SAP standards for End-to-End Solution Operations with SAP’s control center approach. The Operations Control Center executes and controls the Run SAP Like a Factory processes, while the Innovation Control Center ensures optimal custom code management and a smooth transition to production with integration validation procedures. SAP connects to these control centers from the Mission Control Center to ensure that professional support is available to the customer. The following Application Lifecycle Management (ALM) functions are not provided directly in one of the control centers because they must be handled across different areas:

- Change, test, and release management
- Incident, problem, and request management
- Solution documentation

The quality management methodologies are an essential part of SAP's Advanced Customer Center of Expertise (Advanced CCoE) concept and ensure that the KPI-driven processes are continuously improved across all processes and teams. In addition, the quality manager roles ensure consistent and value-centric reporting to the business and management. This unified reporting platform is known as the Single Source of Truth.
1.1 Control Center Approach

The control center approach consists of three components:

- Mission Control Center (MCC)
- Innovation Control Center (ICC)
- Operations Control Center (OCC)

Both the ICC and OCC are made available at your IT facility, while the MCC is located at regional SAP sites. All three approaches are linked together through the SAP Solution Manager application management solution.

Mission Control Center (MCC)

The purpose of SAP Mission Control Centers (MCCs) is to support the ICCs and OCCs at customer locations, enabling proactive identification and fast resolution on critical issues operating the SAP solutions and helping to apply standard SAP software functionality that addresses business requirements. The MCCs are serving as the central inbound channels for all complex and business critical request of our customers. MCCs connecting customers to experts from SAP that are ready to provide support across all solution areas and phases of the application lifecycle. SAP MCCs are located on North America, Latin America, Europe and Asia regions. All MCC’s are networked, use a common infrastructure and service management system, providing 24x7 year around coverage for critical customer situations.
Innovation Control Center (ICC)

SAP’s Innovation Control Center (ICC) is the delivery framework to deliver mid to long term innovation programs. The ICC combines a set of experts, services, tools and templates and represents a lean front office at the customer location that is connected to all offerings of a very strong back office, called the Mission Control Center (MCC). This ensures access to the expertise of the entire SAP ecosystem in a structured way.

The Innovation Framework is the foundation of an ICC and is led by a certified ICC Lead. The Lead delivers against a long-term, value based roadmap, sets-up collaboration tools and dashboards for the connection to the MCC and creates innovation service plans for the underlying projects. ICC services are available for all phase of innovation projects

- Discover/Prepare: e.g. Prototyping
- Explore/Design: e.g. Gap Validation or Design Review
- Realization/Deploy: e.g. Integration Validation (Safeguarding)
- Run: Transition to Operations

The overall concept of ICC/MCC establish a long-term relationship to SAP and helps saving implementation costs and time for our customers.

Operations Control Center (OCC)

The Operations Control Center (OCC) is the physical manifestation of the Run SAP Like a Factory philosophy. The Operation Control Center (OCC) is a service of an IT organization that

- creates the relevant transparency to business and other stakeholders along the IT aspects of the seamless execution of E2E critical or core business processes
- provides the relevant transparency on health of the end to end IT landscape and underlying software components
- manages critical exceptions and continuous improvement on the above aspects based on data driven insights
- is supported by standardized IT processes
An Operation Control Center is sitting as a layer across / above typical IT departments (who are responsible for the day to day IT operations). It is the job of the OCC to immerse itself in the landscape and processes to fully understand the operational challenges facing the business. Centralized tools and standardized monitoring procedures provide much-needed transparency into these challenges. Meanwhile, a focus on continuous improvement and optimization can improve operations over the long term. As a result, IT departments can realize reduced costs and better capitalize on new opportunities for innovation. To achieve these goals, OCC relies on a close interaction with both the Innovation Control Center (ICC) and the SAP Mission Control Center (MCC).

The OCC is typically equipped with large screens that display the status of business processes, IT landscape components, as well as exceptions and alerts. If problems occur, a video link can be used to obtain live support from SAP and partners. The customer is responsible for managing the OCC.

The OCC is most effective when closely integrated with other IT processes, such as IT Service Management (ITSM) and Change Management. Central monitors and dashboards based on application and business process operations display the current status of business and IT-related processes. This data can also be used to drive continuous improvement.

An effective system monitoring and alerting infrastructure is fundamental to the success of an OCC and feeding the OCC. The OCC is safeguarding all relevant IT aspects, and the execution of the end to end business processes in scope. The OCC reacts and manages on exception along this critical business processes according to predefined error-resolution activities. The OCC manages follow-up activities for error handling if the relevant tasks are not completed within a certain timeframe.
2 OVERVIEW OF THE SAP STANDARD FOR BUSINESS PROCESS MONITORING

While the core business processes are running, problems can occur that impact the smooth and reliable operations. The goal of the SAP Standard for Business Process Monitoring is to ensure that these problems are recognized and resolved in a timely manner in order to avoid disrupting business process execution. The standard also aims to help identify and speed up the processes with high error rates. This standard covers every aspect of business process execution identify not only technical errors, such as canceled background jobs or failed IDocs, but also business-critical situations that are not represented by a technical error, such as growing backlog or decreased throughput for a business process.

The first thing to ensure is that the implemented business processes are running stable from a technical perspective. For example, interfaces or background jobs should be processed without errors or, if errors occur, the problem should be resolved as fast as possible. The task of Business Process Monitoring is mainly conducted by IT, who are supported by the technical and cross-application background job monitoring for single jobs or complete BW process chains and interface monitoring, for example, IDocs, qRFC, or XI/PI.

It is important to check how the existing business processes can be improved without significantly changing the process design. Experience shows that customers often operate business processes below 100% efficiently, often seen in the SAP system as a document backlog. Therefore, the full potential of processes as they were initially designed is hardly ever achieved. Removing this document backlog from the system and avoiding systematic errors (master data or configuration issues, end user mistakes) clearly increases efficiencies. This kind of improvement aids with the running of processes to their optimal potential. This task is partly performed by IT and partly on business side (depending on the identified root
cause behind the respective document backlog) with a stronger emphasis on the business department. The analysis and improvement is supported by Business Process Analytics tools.

Once the systematic issues are eliminated, the true business executions can be identified. The focus can then be on further analyzing business processes in order to identify backlog situations, to compare with different organizational units. By learning from these internal best practices and applying them to other organizational units, it is possible to increase customer satisfaction across revenue streams, becoming more effective. This kind of improvement is mainly driven by the business department. The later analysis is partly supported by Business Process Analytics. In addition, the application-specific key figures can be monitored using Business Process Monitoring in order to keep the document backlog low and prevent a drop in the business process output.

From this perspective, Business Process Monitoring and Business Process Improvement are complementary processes, covering all potential problems in the execution of business process. The key user and the responsible business process operations team have to define a model and procedures for handling exceptions and error situations during daily operations, as well as for proactive monitoring of the business process execution. These procedures describe what exception detection activities have to be carried out and which proactive monitoring activities. They provide details regarding which corrective actions are required in the given context and who is responsible for certain activities in the business process operations team or the business department. For both teams, Business Process Monitoring, the interface to other SAP standards such as ITSM, Change Request Management, and Root Cause Analysis completes the procedures for handling detected problems. The execution of these procedures can be supported by monitoring and alerting tools within the Business Process Monitoring concept.

The SAP Standard for Business Process Monitoring provides the ability to safeguard the smooth and reliable flow of the core business processes. As a result, this standard also ensures business continuity. In addition, establishing one central, proactive, and process-oriented strategy for business process and interface monitoring reduces the cost of solution operations by avoiding organizational redundancies. In the context of the “Run-SAP Like-a-Factory” methodology, which helps optimize the implementation and ongoing management of end-to-end solution operations. The Business Process Monitoring standard belongs to the Business Process Operations work package. This work package also includes Job Management and Data Consistency Management, which are available as separate standards. The “Run-SAP Like-a-Factory” methodology supports the implementation of support standards in the IT landscape by providing the roadmap, which is available in SAP Solution Manager. The roadmap contains information not just about what is required to implement, but also, how-to documentation, implementation methodology, and best-practice documents.
2.1 Basic Architecture

With SAP Solution Manager 7.2, Business Process Monitoring is completely integrated into the Monitoring and Alerting Infrastructure (MAI). The MAI focuses on automating the monitoring and checking processes, as well as the response to and prevention of critical situations in a system landscape. Business Process and Interface Monitoring can no longer be set up in the original framework. In some cases, for example, if a solution contains managed systems of release 6.40 or lower, it is not possible to monitor business processes with the MAI.

Alerts for the business monitoring solutions are displayed in the Alert Inbox, accessible directly from the SAP Solution Manager LaunchPad or from the Business Process Operations work center which can also be accessed from the LaunchPad.

![Figure 2: Business Process Monitoring Alert Inbox](image)

2.2 Prerequisites

To use Business Process Monitoring, Solution Manager must be adequately prepared. The following scenarios need to be completed in SAP Solution Manager Configuration (transaction SOLMAN_SETUP):

- System Preparation
- Basic Configuration
- Managed Systems Configuration

Additionally, the MAI infrastructure needs to be activated. This can be done in in the section Business Process Operations in the SAP Solution Manager Configuration.
It is most important to configure the connection of all systems that are to be monitored, and managed through SAP Solution Manager. Depending on the number of managed systems and size of data collection, it is recommended to review and check the hardware sizing of the SAP Solution Manager host. For this purpose, SAP provides the Quicksizer. For more information, see SAP Service Marketplace at http://service.sap.com/quicksizer.

2.3 Business Process Monitoring Architecture with MAI

For objects configured for Business Process Monitoring integrated with the MAI, the data collectors are triggered in SAP Solution Manager Extractor Framework (for PULL metrics every 5 minutes). The data collection is executed and the measured values for the metrics are returned to SAP Solution Manager via the data provider connector. Usually, the data provider also determines the rating for the metrics. Therefore, in addition to the measured value, the rating is returned to SAP Solution Manager. The metric values are forwarded to the SAP Solution Manager Business Warehouse (BW), where they form the basis for the Alert Reporting function.

The MAI Event Calculation Engine rates the metrics. Most of the metrics for Business Process Monitoring already have a rating. In this case, the Event Calculation Engine simply creates the events based on the returned rating.

An alert is sent to an alert consumer based on an event. By default, the alert is sent as an

Depending on the event, an alert is sent to an alert consumer. By default, the alert is raised in the Alert Inbox and an email is sent to the responsible party.
2.4 Migration from Solution Manager 7.1

In the SAP Solution Manager 7.2 a new solution documentation and MAI as infrastructure for Business Process Monitoring are mandatory. When implementing or upgrading to SAP Solution Manager 7.2, it is necessary to prepare for the migration of solutions. The migration consists of 2 parts – migrating the configuration storage as part of the solution migration and migrating to the MAI.

Migration to MAI

If classic Business Process Monitoring is still in use, it is necessary to migrate the solutions to MAI. It is important to note, that Business Process Monitoring on MAI only works for managed systems with basis 7.0 or higher.

If Business Process Monitoring is already in use with MAI for solutions in 7.1, this migration step is not required.

Options for executing the migration to MAI:

- Before the upgrade. This is the SAP recommended procedure.
- After the upgrade as part of the content activation (overall solution migration).

Solution Migration (Content Activation)

For all solutions, the solution documentation needs to be upgraded. This is called "Content Activation" and includes steps to be carried out before and after the upgrade. The migration of the Business Process Monitoring configuration is part of this Content Activation. There are some manual activities (e.g. choosing the scope for the migration) and some automatic activities (e.g. technical migration of the Business Process Monitoring configuration).

![Figure 4: Migration for Business Process Monitoring from 7.1 to 7.2](#)
3 LIFECYCLE OF BUSINESS PROCESS MONITORING

Business Process Monitoring and Improvement can complement each other, covering all potential problems during the execution of your business processes. The business process operations team is responsible for developing and driving the business process monitoring concept which is essential for a successful implementation. This team contains designated members of business process operations and application management. The following figure shows the four phases that are important to ensure a successful Business Process Monitoring implementation. This chapter describes the important tasks and information for the four different phases.

**Figure 5: Implementation Phases of Business Process Monitoring and Improvement**

- **Optimize Phase:**
  - Review number of alerts and real critical situations / Adapt monitoring thresholds
  - BP Analytics Trend Analysis / BP Operations trend should show decreasing trend

- **Plan Phase:**
  - Project, Tools, Authorization and Scope of Monitoring Scenario
  - Decide on Work Streams / Processes to start with

- **Build Phase:**
  - Implement monitoring concept
  - Set up BP Analytics

- **Run Phase:**
  - Monitor Alert Inbox
  - Create Action Plan & Execute Action Items
3.1 Plan phase

Establishing a comprehensive monitoring concept requires a defined project plan and a monitoring scenario scope, which ensures a common understanding for the implementation of the project. Therefore, an implementation project needs to be planned carefully.

3.1.1 Tools and Functions

To perform the various activities within a Business Process Monitoring concept, use the following tools and functions:

- Monitoring tools to gather information about the monitored objects and evaluate the alert statuses. How many monitoring tools you use depends on your monitoring objects.
- Business process documentation tools to document the business process flow and the technical details behind the business process steps and interfaces.
- Documenting tools for monitoring activities, error handling procedures, communication paths, and escalation procedures.
- Notification tools to communicate alerts to the first level application support or forward the alert to the second-level application support.
- Root-cause analysis tools to determine the cause of the alert and solve the alert situation.
- These tools vary and include SAP transactions.
- Logging tools for alert history, alert confirmation, and alert comments to provide a central store for documented alerts and their processing status.
- Incident and problem management tools to forward alerts to the next support level or other teams within the support organization. This tool should support the escalation procedures defined within the incident and problem management process.
- Reporting tools for identifying long-term trends within process execution and alerts.

Tracking multiple monitoring objects requires implementing different monitoring functionalities and these should be integrated in a central automated monitoring tool. The Business Process Monitoring work area in SAP Solution Manager LaunchPad is a powerful tool for this purpose. It provides a single point of access for each of the systems of your landscape. A central monitoring tool ensures monitoring takes place from source system through to target system. This ensures that processes take intersystem dependencies into account. The Business Process Monitoring functionality of SAP Solution Manager enables systematic analysis of end-to-end business processes and helps to ensure the transparency and reliability of core business processes.

SAP Solution Manager can serve as a central point of access for all monitoring activities. By using automated functionalities wherever possible, the manual effort for monitoring is greatly reduced. SAP provides various predefined monitors for business process and interface monitoring out of the box. These monitors include the following:

- Business Data that monitor business-related KPIs.
- Data Consistency that can be used to monitor, for example, data collectors.
- Background Jobs as ABAP Jobs, SMSE Jobs and BW Process Chains.
- Cross-application monitors that can be used to monitor technical KPIs, such as dialog performance and application logs.
SAP also provides monitoring for interface technologies, for example, ALE/IDoc, tRFC, qRFC, and XI/PI Alert Monitoring. Business process documentation should be integrated into this central monitoring tool so that the determined alerts can be immediately correlated to the involved business process steps and interfaces. SAP Solution Manager provides functionally to document business processes, and attach information such as transactions and reports to the business process step. SAP Solution Manager provides a link between monitoring objects and business process steps and interfaces in the form of a graphic representation of the business process and the corresponding alerts. This graphical representation of the whole business process works as a point of access for more detailed information, for example, the actual number of errors for each process step or interface. The objects can be monitored directly in the relevant managed system, providing the ability to perform a deeper analysis.

In SAP Solution Manager, the documentation for responsibilities, monitoring activities, and error-handling procedures are also integrated into the Business Process and Interface Monitoring functionality, so that the person recognizing the alert has immediate access to all information relevant to resolving the error. Automatic alerting mechanisms provide the ability to proactively inform members of business process operations in case a critical situation has occurred. SAP Solution Manager provides both automatic reporting and ad-hoc trend analysis functionality for the values measured within the monitoring objects, allowing support team to easily determine trends like growing backlogs or increasing response times for your business processes.

### 3.1.2 Project Management

SAP Solution Manager provides documented business scenarios to help speed up the implementation. There are available for all core SAP applications in the SAP Best Package Import. These project management features are part of the Solution Administration. Business Process & Interface Monitoring or Business Process Improvement can be used as the entry point. SAP provides general documentation for each step, including typical scenarios, which can be reused and adapted to customer scenarios. It is possible to adjust the estimated effort for each step in the project. No monitoring configuration is included with the SAP Best Package Import.

![Solution Administration](image)

**Figure 6: Implementation Content for Business Processes, Including Standard Content**
In addition, SAP provides a roadmap for implementing Business Process Operations in SAP Solution Manager. This roadmap contains a detailed description of how to implement a Business Process Monitoring concept and is used as project template.

**Figure 7: Roadmap of Business Process Operations**

### 3.1.3 Define Requirements

During this phase decisions regarding the scope and the number of end-to-end business processes, and the initial level of detail for the Business Process Monitoring concept needs to be determined.

All systems and technical components of the system landscape need to be connected to SAP Solution Manager as the basis for monitoring business and technical key figures. It is important to check whether SAP already provides standard KPIs for certain technical or application-related areas. For more information, see SAP Solution Manager Wiki at [https://wiki.scn.sap.com/wiki/display/SM/Business+Process+Monitoring → Media Library → Overview and Demos → PPT Key Figure Catalog](https://wiki.scn.sap.com/wiki/display/SM/Business+Process+Monitoring) or alternatively, [Cloud Catalog for Key Figures](https://wiki.scn.sap.com/wiki/display/SM/Business+Process+Monitoring).

SAP Solution Manager provides tools to monitor the application layer and complex scenarios. Business Process Monitoring provides the ability to monitor various application-related and technical areas. The tool supports job monitoring, interface monitoring, data consistency monitoring, and application log monitoring for both SAP and non-SAP solutions.

In order to monitor non-ABAP or non-SAP systems, use Application Monitoring on remote databases with the following configurations:
- Generic monitoring object for remote databases
  The generic monitoring object allows you to run generic database queries to count the number of entries or distinct values in any remote database table.
- Specific monitoring object for other third-party or legacy systems
  For specific monitoring objects, you need to create a Business Process Monitoring customer exit by using the framework of predefined \texttt{SELECT} statements to access remote databases.

It is important to decide which business processes should be involved during the implementation phase. Consideration for which business and/or technical aspects, along with the level of detail to be monitored need to be determined.
All involved parties need to discuss useful thresholds and possible follow-up activities. The business should deliver business-related KPIs, such as availability or necessary response times. It is important to review the thresholds after the initial setup and on a regular basis, as this will help to ensure optimal effort and results are achieved.
The level of monitoring requires careful planning, and to determine the need for automatic notifications/alerts.

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
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<tbody>
<tr>
<td>Default</td>
<td>You scan the Alert Inbox regularly. The Alert Inbox allows you to process the alerts and confirm them after the root cause of the incident has been resolved.</td>
</tr>
<tr>
<td>Enhanced notification</td>
<td>You can define a notification method. If an alert occurs, you can use email or SMS to automatically inform responsible persons or teams for follow-up. You can also enable dynamic recipient determination using predefined decision tables as part of the Business Rule Framework (BRF†).</td>
</tr>
<tr>
<td>Enhanced incident management</td>
<td>You setup a full integration with incident and problem management by enabling the system to automatically create incident messages in your ticket system. SAP recommends integration with IT Service Management in SAP Solution Manager, but Business Process Monitoring does allow setup and integration with other third-party ITSM systems.</td>
</tr>
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</table>

It is possible to combine various levels for use with different KPIs and systems.

**Recommendation**

SAP recommends integrating alerting into your incident management process. To account for critical situations, you should combine this with enhanced notification to ensure that not just the incident management team sees the incident. This is the most reliable way of ensuring that you handle an incident properly and that you track and document every occurrence and error in one central system. You can also set an ABAP program to automatically execute when a specific error occurs.

In addition to the reactive use of monitoring and alerting, IT and business processes can be optimized. Suitable monitoring procedures for historical and prognosis KPI data are essential for the IT optimization process. Therefore, it is necessary to plan how it can be reported on collected data. All measured monitoring data will be stored in the SAP Solution Manager Business Warehouse. It is necessary to plan which KPIs are useful as well as how and how often they should be reported.
Reporting is only useful if a follow-up process for the improvement is established. It is important to plan who will use the reporting and what should happen if critical values or critical prognoses occur.
3.1.4 Plan Authorization Concept

An authorization concept should be part of the monitoring blueprint as well. A clear definition of who has access to which parts of the monitoring and reporting framework is required. There should be only a limited group of named users that have full access to all monitoring objects and the monitoring Customizing. The service desk and support staff should have read-only access to the Alert Inbox and should be able to use available root-cause analysis tools.

SAP Solution Manager delivers predefined roles and authorizations, which can be adapted to existing authorization concepts if necessary.

The section Business Process Operations in SAP Solution Manager Configuration (transaction SOLMAN_SETUP) should be completed. This includes the adjustment of the user authorization. With the change solution documentation, the user authorization concept has changed in SAP Solution Manager 7.2. They are available as template users in SOLMAN_SETUP and can be copied to assign the appropriate roles to individual users.

- BPO_ADM_XXX: BPO administrator user
- BPO_ALRT_XXX: BPO alert user

It is possible to restrict the Business Process Monitoring user to see only the solution documentation structure elements they are responsible for (e.g. only relevant business processes). Solution documentation offers the concept of authorization areas to restrict the access to structure elements. This is achieved by assigning a defined authorization area to the field authorization area of the authorization object solution documentation.

3.2 Build phase

Configuration of Business Process Monitoring is carried out by following the guided procedure in the Business Process Operations scenario of SAP Solution Manager Configuration (transaction: SOLMAN_SETUP).

Figure 8: SAP Solution Manager Configuration: Business Process Operations
During the setup, the system automatically checks the landscape preparation. The OCC Alert Reporting is intended as a kind of health check for the OCC. It provides various out-of-the-box key figures that help determine the workload for the OCC during a certain time span and whether or not the OCC was able to handle the workload. The OCC Alert Reporting can be accessed from the Solution Manager Launchpad.

Connected systems can be managed and configured to prepare for proper data collection. The configuration process can be executed as often as necessary to adapt and include changes in the landscape and/or processes. When adding new systems, or changes to templates, the configuration will be required to be updated.

After finalizing the configuration, Monitoring can commence. The list of monitoring objects depends on the add-on ST-A/PI version on the managed system and the product and version of the managed system. For example, there will be different objects in a CRM 7.0 system than in an ERP 7.0 system. The majority of monitor definitions and data collectors in Business Process Monitoring 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 definition needs to be transferred from the managed system to the central repository in the SAP Solution Manager system.

A reload of the monitors is required in following cases:

- ST-A/PI version was update on the managed system(s)
- ST-A/PI SP was update on the managed system(s)
- New monitoring objects via customer exit have been developed and transported to the managed system

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 any 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.

In Solution Manager 7.2 the way Business Process Monitoring is set up has changed. Business Process Monitoring Setup is now integrated into the new solution documentation. Business Process Monitoring Objects are created and configured directly as part of the solution documentation. The technical configuration of object is stored in MAI.

The new solution documentation has new structure elements (BPMN compliant) and much more complex business process structures are possible (folders, processes linked within processes). Furthermore, there is unifying project and solution documentation and version management for documentation.

![Solution Documentation concept](image-url)
In Solution Manager 7.2, a solution has different branches assigned that represent a “version” of the solution. Technically, it is possible to configure Business Process Monitoring in all branches. However, only monitoring in the Production branch and in the Operation branch can be displayed in the monitoring application and alert inbox, OCC Alert Reporting and Business Process Monitoring Dashboards.

SAP Best Practice is to use the Operation branch and configure and consume monitoring via this Operation branch. Please note that the Operation branch of a solution should be only used for monitoring setup and not for any other activities like the creation or change of the business process. Business processes should only be created/changed in the Maintenance branch of a solution. This change then has to be released to be visible in the Production and Operation branch.

The Operation branch of a solution can be accessed via Solution Documentation. This can be accessed via transaction SOLMAN_WORKCENTER. This will open the Solution Manager Launchpad. Here, choose the tile “Solution Documentation – Monitoring Configuration” under group “Business Process Monitoring”.

The configuration of Business Process Monitoring is based on the Business Process Hierarchy (BPH) of the related solution. The relevant business process steps need to be selected for the business process in the Operations Branch of the solution.
In contrast to the configuration of Business Process Monitoring, the key figures for Business Process Analytics are set up at the logical component group level. This action is executed in the Analytics Library in the Solution Documentation in the Operations Branch of the Solution.

![Figure 1712: Business Process Analytics Setup](image)

### 3.3 Run phase

Auto-reaction methods need to be set up, in order to send notifications regarding exceptions. For example, these can specify that the system sends an email containing a direct link to the Alert Inbox in SAP Solution Manager. In the Alert Inbox, previous alerts and cross-check threshold values and selection parameters can be viewed. Within the Alert Inbox, access to the respective managed system is available to run detailed root cause analysis. This may mean executing a transaction or report on the managed system or displaying the list of documents or items that led to the alert. From the document or item list, it is possible to open the single business document, job log, IDoc, or qRFC queue and determine the reasons for the alert. This allows for errors to be resolved by identifying the root cause which led to the exception. After the executing the root-cause analysis and the resolving the error, the alert can be confirmed in SAP Solution Manager.

If available error handling procedures are not sufficient to find a resolution to the alert situation, an incident is created and forwarded to Incident Management.
If Business Process Monitoring is executed as part of the OCC, Event Management Process will need to be established as shown in the following figure:
3.3.1 Monitoring Activity and Alert Detection

The business process operations team executes the defined monitoring activity and detects the alert within this activity by comparing the observed situation to the defined thresholds or status values. An alert is raised if the observed value for the monitoring object is outside the limits defined by the thresholds or if the status of the monitoring object has reached a defined value. This determines whether the business process is running properly and matches all business requirements, or whether a critical situation exists that requires further activities.

If an automated monitoring tool is in use, the alert is detected automatically. In case of an alert, members of the business process operations team are notified by email or SMS. If no automated monitoring tool is used, the alert situation will need to be detected manually.

3.3.2 Initial Analysis and Error Handling

The business process operations team performs the initial alert analysis. It begins by determining the business relevance of the alert. It is necessary to identify which business processes, business process steps, or interfaces are the source of the alert and which business processes, business process steps, or interfaces are affected by it.

For each business-critical alert, the initial error handling procedures documented for the business process operations team are performed within the initial analysis. These error handling procedures are stored in a central location and are accessible to all involved parties. These include procedures like unlocking a user or restarting a job in the business processes.

3.3.3 Business Criticality and Communication

If the exception handling procedures do not resolve the exception, the key user verifies the criticality of the business process.

Business process operations works in close collaboration with the key user to determine if problems within the business process execution have caused the alert situation or the exception. The key user defines the business criticality of the alert or exception. Key users also define further applicable error or exception handling procedures that can be performed by the key user or the business process operations team. If these procedures are not successful, the key user creates an incident through the key user or the business process operations team.

3.3.4 Create Incident

If the available error handling procedures are not sufficient to resolve the alert, the business process operations team or the key user creates an incident is created to forward the alert or exception to the application management team. This incident contains the description of the problem, including the expected behavior compared to the observed behavior, steps that led to the problem, and the error handling procedures that already have been applied.
3.3.5  Create Action Plan

After root cause has been determined, the system determines countermeasures for solving the alert and compiles them in an action plan. Depending on the outcome of the root-cause analysis, executing the involved action items may result in changes to the system or changes to the Business Process and Interface Monitoring configuration. If the problem was caused by an issue related to the execution of a business process or the underlying technical infrastructure, you need to fix this issue by changing the system or adjusting the technical infrastructure. It is also possible that the exception occurred because the Business Process and Interface Monitoring configuration did not include an alert that could have discovered the problem before it resulted in an exception. In this case, it is necessary to adjust the Business Process and Interface Monitoring configuration.

3.3.6  Solve Incident

Once the activities required to resolve the alert or exception have been performed, the application management team communicates the problem resolution to the business process operations team or the business department and closes the incident, indicating that the problem has been solved from application management side. Closing the incident must be signed off by the business process operations team or the business department.

3.3.7  Alert Resolution Approval

The business process operations team approves the alert resolution, while the key user approves the exception resolution. Until the approval, the problem is not considered fully resolved. In parallel to this alert handling process, the Run phase can also cover activities for business process improvement. These activities are usually triggered by a business process improvement project, which itself can be triggered from within a monitoring concept.
3.3.8 Improving Business Processes

The following figure shows how you can improve your business processes:

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Get Global Transparency</td>
</tr>
<tr>
<td>2</td>
<td>Identify Org Units to be analyzed</td>
</tr>
<tr>
<td>3</td>
<td>Split between old &amp; operational data</td>
</tr>
<tr>
<td>4</td>
<td>Perform Detail Analysis</td>
</tr>
<tr>
<td>5</td>
<td>Identify Root Causes (RC)</td>
</tr>
<tr>
<td>6</td>
<td>Document Root Cause via Issue</td>
</tr>
<tr>
<td>7</td>
<td>Define Action Items via Task</td>
</tr>
<tr>
<td>8</td>
<td>Visualize Impact on Business KPIs</td>
</tr>
<tr>
<td>9</td>
<td>Control Achievements via Progress Management Board</td>
</tr>
</tbody>
</table>

**Figure 20: Business Process Improvement**
### Step Description

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create Frequency Diagram of Root Cause</td>
<td>You need to demonstrate the effort required to fix particular root causes with a corresponding frequency diagram. This diagram should list how many times a certain root cause has been identified (per key figure). This helps you to justify the effort required.</td>
</tr>
<tr>
<td>Create Action Plan</td>
<td>For every root cause, you need to create a dedicated action plan to reduce the existing document backlog and avoid similar issues in the future.</td>
</tr>
<tr>
<td>Visualize Impact on Benefit and Value Categories</td>
<td>Every key figure should visualize which value areas are affected by the identified root cause. Afterwards, you need to perform the defined actions.</td>
</tr>
<tr>
<td>Control Achievements with Trend Analysis</td>
<td>The trend analysis function allows you to track the progress made after implementing the action items. Additionally, you can check specific business key figures that might be influenced positively when reducing the identified document backlog. To automatically verify the success of the Business Process Improvement activities, you set up additional alerting for the relevant key figures.</td>
</tr>
</tbody>
</table>

### 3.4 Optimize phase

It is important to continually optimize Business Process and Interface Monitoring activities, as well as business process improvement to ensure that they fit into the customer support strategy. It is necessary to integrate both processes into customer incident and change management processes. Changes to business processes trigger changes in the monitoring concept, such as adjusting thresholds or selection criteria.

Additionally check whether changes to business processes, such as changes to document types and other customizing changes, are effective by performing a business process improvement project. It is important to have regular reviews, in order to ensure success of the monitoring concept and the potential need for improvement. For example, check the following KPIs,

- Number of incidents that are not detected by monitoring
- Number of alerts that are raised incorrectly
- Time from alert creation to alert resolution
- Number of alerts raised by monitoring
- Trend in measured value for critical key figures

For business process improvement, the improvement activities largely focus on improving recognizing the need for an improvement project. Therefore it is important to check the following KPI’s regularly:

- Number of incidents that could have been avoided by an improvement project
- Trend in measured value for critical key figures
The monitoring information for business processes can be displayed in the Business Process Operations work center of the SAP Solution Manager. Business Process Monitoring and Improvement are integrated in processes. Those processes need to be optimized. Consideration of the quality criteria for the monitoring processes and how KPI’s can be measured should take place. Ideally, monitoring processes detect upcoming events or potential incidents fast enough to react and avoid incidents for end users. The following activities should be considered:

- Improvements to the monitoring concept, such as adjustments to monitoring objects
- Number of incidents that could have been avoided by performing Business Process Improvement activities
- Changes to business processes to avoid critical situations as early as possible
  These are based on the results derived from different Business Process and Interface Monitoring sources, such as the Business Process Operations Dashboards.
- Verification that changes in the business processes are effectively used in productive operation, for example, changes in document types and other customizing changes
- Ratio of manual, reactive work to proactive work

As with any process, it is important to continuously optimize your productive business processes because daily operations change.
4 DRIVING CONTINUOUS IMPROVEMENT

4.1 Quality Assurance Tasks

Business Process Monitoring describes the monitoring and supervision of mission-critical business processes, including how to define a model and procedures to manage exceptions and error situations during daily business operations. Business Process Improvement helps to identify and speed up processes with higher error rates or processes that may be less cost-effective. From a quality management perspective, the key tasks are as follows:

- Introduction of a proactive business process and interface monitoring
- Regular adjustment of monitoring thresholds until business users are satisfied
- Ensure backlog and throughput monitoring
- Ensure follow-up support process KPIs, such as response and resolution time
- Ensure quality of documentation
- Identify process exceptions and gaps
- Ensure regular communication between business and IT

4.2 Quality Targets and KPIs

To assure a high maturity of business process monitoring and drive the value recognition of IT, the most important quality targets are as follows:

- Improved transparency by constant monitoring of business processes
- Increased effectiveness by proactive and faster detection of business process deviation
- Increased efficiency and stability

<table>
<thead>
<tr>
<th>Quality Target</th>
<th>Challenges</th>
<th>KPIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved transparency by constant monitoring of business processes</td>
<td>• Identifying critical business processes</td>
<td>• Percentage of your critical business processes in that are integrated into Business Process Monitoring</td>
</tr>
<tr>
<td></td>
<td>• Setting up key alert thresholds in order to ensure transparency of the key critical business process steps</td>
<td>• Trend in time it takes to escalate if severe business impact is identified</td>
</tr>
<tr>
<td></td>
<td>• Ensuring cooperation between business and technical teams</td>
<td>• Trend in time of error resolution</td>
</tr>
<tr>
<td></td>
<td>• Regularly reviewing thresholds to ensure</td>
<td>• Percentage of business process documentation completed</td>
</tr>
<tr>
<td>Quality Target</td>
<td>Challenges</td>
<td>KPIs</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Continuous appropriate setup of Business Process Monitoring | • Maintaining documentation, including business process owner and escalation paths, to achieve the defined target values in terms of reduction in escalation time and error solving due to central documentation, guided error handling procedures, escalation paths, and responsibility assignments | • Percentage of ownership assigned to business processes and updated  
• Percentage of improvements resulting from business department performance comparison performed |
| Increased effectiveness by proactive and faster detection of business process deviation | • Continuously improving IT operations and the reliability of service levels                                                                                                                                  | • Trend in incidents raised by end users  
• Percentage of critical business processes monitored versus overall critical business processes  
• Trend in user satisfaction after service-level reporting has been implemented  
• Reduction in effort spent for service-level reporting measured in percentage |
| Increased efficiency and stability                | • Reducing operational costs by automating monitoring, ensuring faster and reliable deviation handling, and reducing interface and background job failures  
• Reducing costs and manual effort required to monitor IT systems, which support key business processes. This includes the cross-application, interface, and non-SAP systems to ensure an end-to-end solution  
• Setting up and integrating real-time alerts effectively to improve reaction time and reduce manual monitoring effort | • Trend in number of resources used for monitoring  
• Trend in critical business process downtime  
• Trend in savings in terms of failures, time savings, and human resources  
• Trend in optimized performance for critical business processes |
5 TRAINING

For Business Process Monitoring and Improvement, SAP offers the following training courses:

E2E300 - Business Process Operations
This training course explains how business processes running in a solution landscape should be supported as part of Run SAP like a Factory and consequently helps trainees understand the content and purpose of Business Process Operations and the usage of the available tools in SAP Solution Manager. The course explains which roles should be involved in the implementation and execution of a Business Process Operations concept.

**Course Content**
- Introduction to Business Process Operations
- Job Management, including the usage of the job request process and the job documentation in SAP Solution Manager
- Business Process and Interface Monitoring, including the usage of Business Process Monitoring in SAP Solution Manager
- Data Consistency Management, including the usage of the Data Consistency Monitoring, Guided Self Service for Data Consistency Management, and Cross-Database Comparison in SAP Solution Manager and the tools for transactional correctness
- Business Process Improvement, including the usage of Business Process Analytics in SAP Solution Manager
- Business Process Performance Optimization
- Operation of an OCC, including the usage of the BPO relevant dashboards and the OCC Alert Reporting in SAP Solution Manager

**Expert Guided Implementation Sessions**
For Enterprise Support Customers, SAP offers Expert Guided Implementation Sessions (EGI). Expert Guided Implementation (EGI) sessions are a combination of remote training, live configuration, and on-demand expertise, which allow you to perform complex activities with the help of experienced SAP support engineers. The instructor will demonstrate what to do step by step. Afterwards, you can perform the relevant steps in your own version of SAP Solution Manager. If you have any questions, you can then contact an SAP expert by phone or e-mail.
SAP offers two EGIs in the area of Business Process & Interface Monitoring:
- Business Process Monitoring & Stabilization
- Business Process Analytics & Improvement (BPAI)

For more information about EGIs and the schedule see the EGI calendar on SAP Service Marketplace at [http://www.service.sap.com/~sapidb/011000358700001780312008E](http://www.service.sap.com/~sapidb/011000358700001780312008E).