Best-Practice Document (RUN Phase)

SAP Standard for Job Management

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SAP PRODUCT(S)  SAP SOLUTION MANAGER
PRODUCT VERSION(S)  7.2
OPERATING SYSTEM(S)  ALL
DATABASE(S)  ALL
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DOCUMENT HISTORY

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<td><strong>Example</strong></td>
<td>Emphasized words or expressions.</td>
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<td><strong>EXAMPLE</strong></td>
<td>Technical names of system objects. These include report names, program names, transaction codes, table names, and key concepts of a programming language when they are surrounded by body text, for example, SELECT and INCLUDE.</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.
Figure 1: Organizational model for solution operations

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.

![Figure 2: Interaction Between ICC, OCC, and MCC](image)

**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 in North America, Latin America, Europe, and Asian regions. All MCCs 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 establishes 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 a 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.

Figure 3: SAP Mission Control Centers – Customer Innovation Control Center collaboration model
An Operation Control Center is a layer across typical IT departments (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, a close interaction with both the Innovation Control Center (ICC) and the SAP Mission Control Center (MCC) is required.

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 these 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.
The SAP Standard for Job Management provides information regarding a Job Management concept in general, as well as the implementation and use of Job Management (JM) in SAP Solution Manager following best practices to operate SAP-centric background operations aiming for optimal performance, efficient exception detection and exception handling. This document covers the following topics:

- Motivation for Job Management
- Architecture of Job Management in SAP Solution Manager
- Implementing Job Management following a project-based approach

2.1 Introduction and Motivation for Job Management

In the modern environment of real-time data processing, efficient, automated tasks are essential, and the need for background processes is high. The more complex the landscapes and requirements are, the more important it is for companies to increase the efficiency of all tasks related to automation by background jobs.

As an example, using external scheduler capabilities, Jobs automation could be improved by using job chains instead of separate single jobs. Jobs could be concatenated into a job chain, which structures individual jobs into serial and parallel schema, which often contain many different dependencies on the sequence of jobs. If one or more jobs in a job chain have been canceled, an alert system must inform the appropriate support level or start an automatic error handling procedure, including the restart of the jobs.

Figure 6: Example Illustration of a Job Chain

An important aspect of Job Management is ensuring the efficient use of the available system resources, for example, CPU and memory. Therefore, job management affects the whole system landscape. A key element of job management is coordinating online user activity and background jobs that need to be performed simultaneously in the same system environment. This coordination is essential to avoid performance bottlenecks and delays in processing business data. To enable this coordination, you need to implement Job Management centrally so that end users cannot schedule background jobs themselves. Ensuring that IT operations handle job scheduling centrally means
also that end users remain focused on their own tasks and that job handling is defined in each phase of the job lifecycle. 
Job Management does not involve just automating the process of job scheduling, but also thoroughly documenting background jobs. A complete description of background jobs increases the transparency of the system landscape and supports scheduling decisions and the process of identifying potentially unnecessary jobs are simplified, which also leads to more efficient use of the available hardware resources. The documentation of jobs is also important in emergency situations, e.g. so that cancelations of critical jobs are handled correctly by IT staff that cannot be expert in all applications.
Japs and job chains execute programs in the background. Especially for changes affecting periodic jobs, there should be defined change procedures in place covering technical and functional checks. Changing jobs running in a system should happen in a defined way to ensure functional consistency of the job. This aspect of Job Management has a relation to Change Management, which is described in detail in the respective standard.

The SAP Standard for Job Management covers the following areas in detail:

- **Job Governance**
A standardized job request process enables you to manage changes more effectively and eventually move from end-user-controlled job scheduling to a centralized concept. Even if you cannot completely centralize job scheduling, a standardized request process still enables the central JM team to assess user-controlled jobs and cancel them if necessary.

- **Job Documentation**
It is important to document jobs or job chains in your landscape. The job documentation should contain important information like the job owner or the group responsible for the job, a description of the purpose of the job, the business process or business area the job belongs to and error handling information that describes how to react in error situations. You can also use job documentation to schedule a documented object, begin monitoring that object, or to act as a starting point for incident management. The job documentation will also support you in performing regular reviews to avoid that obsolete jobs run for years without getting noticed.

- **Job Scheduling**
Job scheduling involves all tasks related to scheduling and technically managing jobs in job chains. By using an appropriate job scheduling application, you can reduce the resources that the jobs in your landscape consume.

- **Job Monitoring**
SAP Solution Manager offers a comprehensive and adjustable alerting infrastructure. This infrastructure ensures that administrators are alerted to critical situations and that the responsible people are notified accordingly. You need to implement job monitoring from both a technical and business perspective so you can monitor different key figures. Job monitoring is the first step in the root cause analysis process (RCA).

- **Job Reporting**
The SAP ABAP scheduler (transaction SM36 and SM37) stores job execution data, that can be used for regular long-term analysis. This reporting plays an important role in optimizing JM processes. These points will be described in more detail in the following sections.

### 2.2 Job Request Process

As one central job governance element, the job request process describes how new background jobs or changes to existing background jobs are requested, planned, approved, documented, tested, scheduled,
executed, and monitored. As you can schedule background jobs to fulfill business process-related functions (e.g. creation of deliveries) or system-related functions (e.g. housekeeping jobs), planning, approving, and scheduling background jobs requires a joint effort between the Business Process Operations team and the Application Operations or Technical Operations team (IT).

To ensure uniform handling of job requests, you need to implement the job governance process in conjunction with an IT Service Management (ITSM) concept or as part of your Change Management.

The Job Request Process is part of the Run phase of the Job Management scenario.

Note

You can use the project management features in SAP Solution Manager including the predefined roadmap to implement Job Management (JM).

The Job Request Process consists of the key stages described in the following sections.

2.2.1 Create Job Request

The purpose of this step is to collect basic data and background information related to the job from key users or end users. The requester fills out a structured form to request a new job or changes to an existing job. Users should be able to access the request form either directly from SAP Solution Manager or externally using a URL. The technical object of the job request is stored in SAP Solution Manager. The job request also forms the basis for managing process-related tasks.

2.2.2 Plan Job Request

Within the IT support organization, the Business Process Operations (BPO) team is responsible for job request management.
In this step, the BPO team evaluates the validity of the job request. A valid job request fulfills the following criteria:

- Genuinely relevant for the business
- Not similar or identical to an existing request
- Fits into the current job schedule

In the Job Management Work Center, you can use the following tools to help evaluate the validity of the request:

<table>
<thead>
<tr>
<th>Tool</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Management Gantt Chart</td>
<td>To access the Gantt chart, choose Analyze (Gantt) from the list of common tasks. This tool provides a graphical overview on the batch schedule. You can also filter the results for different solutions.</td>
</tr>
<tr>
<td>Batch Job Analysis</td>
<td>To access Batch Job Analysis, choose Analyze from the list of common tasks. This tool is available in each SAP system and can be used to analyze jobs on a technical detailed level. It combines job execution data with workload and work process information and displays the results in an adjustable view.</td>
</tr>
<tr>
<td>Job Documentation</td>
<td>All information about a job is generated in the Job Documentation view of the Job Management work center.</td>
</tr>
<tr>
<td>Job Management Reports</td>
<td>Job Management provides the following types of reporting:</td>
</tr>
<tr>
<td></td>
<td>o ABAP query-based reporting using data from job requests, change documents, or job documentation.</td>
</tr>
<tr>
<td></td>
<td>o BW-based reporting in a dashboard using job-execution data.</td>
</tr>
<tr>
<td>SAP Business Process Automation by Redwood</td>
<td>You can use the scheduler application to get an overview on the processes and process chains scheduled.</td>
</tr>
</tbody>
</table>

For more information about these tools, see the [SAP Help Portal for Job Management Work Center](#). During the planning step, you enhance the job request created in the previous step with additional information about the job or/and assign the request to existing job documentation in SAP Solution Manager.

### 2.2.3 Approve or Reject Job Request

If the job request is rejected, the end user or key user can either refine the request so that it better fulfills the validity criteria, or they can create a new request. The request might be rejected temporarily, for example, if additional information is required. However, the request can also be permanently rejected, for example, if the required data does not exist or if the request is already covered by another job.

If the job request is approved, confirmation is sent to the relevant user in the business department.

How approval and rejection is set up technically, can be different. In SAP Solution Manager, this can be realized with ITSM, ChaRM, or both applications combined.
2.2.4 Document Job

The Business Process Operations team is responsible to ensure that jobs are documented when they are scheduled. While the end user must provide business-specific information with the request, BPO team members know the business process requirements. They add more information to the documentation during approval. For technical housekeeping jobs, the documentation is created by a member of the SAP Application Operations team.

As the job documentation is reused for scheduling, monitoring, and issue resolution, it should be ensured that a central Job Management team needs to continuously make sure that the information contained is up to date. The information in Job Documentation is reused in different places, for example, in the ABAP Job Overview (transaction SM37), in SAP Business Process Automation by Redwood (SAP BPA), or on an intranet. Therefore, SAP strongly recommends implementing some form of version management for all job documentation.

In SAP Solution Manager, you can create job documentation for an approved job request by automatically taking over information provided in the initial request form. The Job Documentation view in SAP Solution Manager provides the central point of access to all information about the job. The job documentation itself contains the technical information required to schedule the job, as well as the following business-related information:

- Error handling procedures
- Points of contact
- Escalation procedures
- Scheduling restrictions, such as dependencies
- Test documentation
- Validity date
- Related Business Process (i.e. link to Solution Documentation context)

Note

Creating job documentation or job chain documentation as part of the job request process is not the only way to generate this kind of object. To offer the most flexibility for documentation tasks, you can also create this documentation in one of the following ways:

- Manually
- By copying existing documentation
- From a template
- By importing job information from a managed system or a scheduling application
- By importing job information from external files (mass import)
- By setting up monitoring for specific jobs

2.2.5 Test Job

You need to test new jobs or changed existing ones in the development or quality assurance environment. Testing jobs is vital, especially if the underlying program contains customer coding. Test jobs against the following criteria:

- Functionality
  - Check whether the program works correctly from a functional perspective.
- Resource consumption
Check the resources the job consumes, for example, memory. This helps you decide when to schedule the job. You need to plan the test carefully, for example, by making sure test data is available. Otherwise, your tests will not produce accurate results.

- **Dependencies**
  
  Check whether the job has dependencies on predecessors, successors, authorizations, and so on.

The aim of this step is to produce a list of issues to be considered in the production landscape. All test documentation is attached to related job documentation.

### 2.2.6 Schedule Job

When the job is completely documented and properly tested, the Application Operations team can finally schedule the new job in the production system or make necessary changes. The new schedule must fulfill the given business requirements and use hardware resources as efficiently as possible. You should have a standardized procedure for transferring new objects to the production environment.

You can schedule the job centrally using one of the following tools:

- **Job Management Work Center in SAP Solution Manager**
  - Using the Schedule Background Job scheduler (transaction SM36) through a BC-XBP interface
  - Using a connected scheduling tool through the Solution Manager Scheduling Enabler (SMSE) interface
- **Job Documentation**
- **Any external scheduling tool like SAP Business Process Automation by Redwood (SAP BPA)**

### 2.2.7 Run Job

Running the job should be an automated process controlled by the productive scheduler application. The job runs in the production system once or periodically according to the configured start conditions (for, e.g., scheduled date and time or after a specified event).

### 2.2.8 Monitor Job

When running a job, it is important to identify exceptions so that the monitoring team responsible for job exception management knows when to take what action. Therefore, SAP recommends automating the monitoring process.

You need to perform both technical monitoring and functional monitoring, for example, by checking specific log files for error messages.

The following tools provide functions to help you automate job monitoring:

- **Business Process Monitoring in SAP Solution Manager**
- **Central Job Overview in Solution Manager for monitoring jobs from external scheduling tools (prerequisites need to be fulfilled)**
- **System and Application Monitoring in SAP Solution Manager**
- **SAP Business Process Automation by Redwood (SAP BPA)**
- **External scheduling tools**
- **External monitoring tools**
2.2.9 Root Cause Analysis

When your monitoring processes detect an error, you need to resolve the incident as soon as possible. To resolve the incident, use the documented error handling procedures, responsibilities, and escalation procedures that you outlined in the job documentation. It is also important to identify the root cause of the incident to help prevent similar incidents in the future. You should document any solution to the root cause for reference purposes and create a log entry confirming that the incident is resolved. Typically, the Application Management team is responsible for performing root cause analysis.
For more information see, the **SAP Standard for Root Cause Analysis**.

2.2.10 Controlling End Users

Controlling background jobs that are scheduled by end users is one of the top challenges for IT departments. When end users schedule jobs that bypass the central scheduling concept, this undermines all efforts to control the workload and issues on the backend system.
During busy periods, for example, period-end closing, additional jobs scheduled by end users can cause system overloads and unavailability. In addition, jobs that run outside of a central scheduling process are usually not covered by any Service Level Agreement and are not properly monitored by the corresponding scheduling team. End user jobs are often not documented properly and do not have defined error handling procedures. Therefore, even if the jobs are monitored, there is no predefined way to deal with problems. For these reasons, SAP strongly recommends managing job requests using the standardized process and not granting job scheduling authorizations to end users. However, in some situations, you might not be able to manage job requests according to the SAP Standard, for example, if the company policy does not allow you to restrict authorizations from end users.
SAP provides the following solutions for this problem for ABAP-based systems:

- **Schedule Background Job (transaction SM36), Simple Job Selection (transaction SM37), and ABAP Program Execution (transaction SA38)** can redirect end users to the job request form. Based on the data that the end user enters in the form; the system determines how the job is scheduled. For example:
  - For a one-time job, the end user can schedule the job directly in the respective backend system.
  - For a recurring job, the end user creates a job request which is used to document the requested job comprehensively before it is being scheduled by the central team.
This solution ensures that all recurring background jobs that end users try to schedule must follow a defined request process and are documented centrally in SAP Solution Manager.
- To restrict end users to schedule periodic jobs based on specific authorizations, review SAP Note 1716340 for more information.
- **Job Interception** automatically controls all jobs that are scheduled by certain users by setting background tasks mentioned above or any other form of automatic job generation. Job Interception is a good complement to the possibilities mentioned above.
2.3 Architecture of Job Management in SAP Solution Manager

2.3.1 Modularity

Job Management (JM) should ensure that all tasks related to background processing are optimally managed. Therefore, JM in SAP Solution Manager combines the functionality and features of different applications into one approach. SAP Solution Manager provides the following benefits:

- Infrastructure for documentation tasks and project management
- Complete request and change (governance) process with connection to IT Service Management and Change Management
- Complete monitoring solution with connection to IT Service Management and Root Cause Analysis process

SAP BPA by Redwood acts as a central job automation platform. As a process automation solution, it enables you to do the following:

- Speed up the execution of automated processes by minimizing the downtime during business process changes. SAP CPS provides an automated transition between the steps of a business process to ensure a smooth and reliable process flow.
- Extend event-driven process automation
- Implement business-driven schedules
- Optimize the use of system resources
- Automate synchronous and asynchronous workload management
- Maximize workload routing and load balancing
- Monitor and manage present and future workload
- Reduce the number of human errors resulting from manually completed tasks
- Execute simple and complex process flows quicker
- Extend history, logging, and auditing of previously executed work
- Integrate further applications, such as Financial Closing Cockpit and Business Warehouse, based on SAP BPA

All features can be integrated either at the same time or sequentially as required (on demand). Defining the scope for such an implementation is the first step when implementing a project.

2.3.2 Infrastructure

Using SAP Solution Manager in conjunction with SAP BPA is the recommended platform for a Job Management scenario.
SAP Solution Manager, based on AS ABAP of SAP NetWeaver, plays a central role in your system landscape because you need to connect all systems you want to manage to the SAP Solution Manager system. For operation and customizing tasks, it provides various enhanced user interfaces for each scenario.

SAP BPA runs in AS Java of SAP NetWeaver. Its central component, the SAP BPA server system, connects to all systems where jobs need to be executed. SAP BPA provides a scheduler user interface running on the server system. It is the central point of control for all jobs in the scheduling landscape, where you technically plan, schedule, and monitor jobs on. When the start conditions for a job or job chain are fulfilled, SAP BPA executes the job automatically in the respective remote system.

You can integrate SAP BPA with the following systems:

- Remote SAP ABAP systems where jobs run and are monitored, including SAP Business Information Warehouse (BW) systems
- BI Platform and Data Services systems
- Remote non-ABAP systems
- Job Management work center in SAP Solution Manager

2.3.3 Authorization Concept

As Job Management relies on large numbers of people using different tools and applications, an authorization concept needs to be carefully considered. In general, the necessary authorizations depend on which phase of the integration you have reached. For example, the set of authorizations required during the Build phase is different to the authorizations required for day-to-day operations after going live. This section outlines a typical authorization concept for daily operations.

Make sure you only provide users the authorizations they need to perform their tasks. To keep an overview of your authorization concept, you can apply user templates. SAP Solution Manager provides user and role templates to this end.

Typical Roles for Job Management

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
<th>Responsibilities</th>
</tr>
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<tbody>
<tr>
<td>Business Process Operations</td>
<td>Member of the customer support organization and plays a central</td>
<td>Defines monitoring objects</td>
</tr>
<tr>
<td>Role</td>
<td>Description</td>
<td>Responsibilities</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
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</table>
| Business Process Operations Team | Team with expert knowledge of how business processes are implemented in the solution landscape. | • Provides functional expertise during implementation and improvement cycles  
• Serves as second-level support team for background jobs related to business functions  
• Requests cross-application jobs to be scheduled, changed, or deleted  
• Completes job documentation for jobs related to business functions  
• Approves background jobs related to business functions |
| Application Operations Team | Team with expert knowledge of the technical capabilities for monitoring, alerting, analysis, and administration of SAP solutions. | • Provides technical expertise during implementation and improvement cycles  
• Serves as second-level support team for background jobs related to technical operations  
• Requests technical operations jobs to be scheduled, changed, or deleted  
• Completes job documentation for jobs related to technical operations  
• Approves and schedules background jobs  
• Schedules all jobs using a defined scheduling tool |
| Business Process Champions | Business experts from various departments in the organization. Define the business requirements that form the basis for all operations activities. | • Give final approval of job scheduling process following testing  
• Serve as escalation contacts for business-related background jobs  
• Work together to resolve scheduling conflicts within business processes |
<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
<th>Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• Provide detailed knowledge of business processes for incident resolution</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Define business requirements</td>
</tr>
<tr>
<td>Key Users</td>
<td>Members of business departments who are experts in their respective fields.</td>
<td>• Test the implemented job scheduling process and documented error handling</td>
</tr>
<tr>
<td></td>
<td>who do not necessarily have an overview of the entire business process, but</td>
<td>procedures</td>
</tr>
<tr>
<td></td>
<td>do have extensive knowledge of the functionality relevant for their daily work.</td>
<td>• Request business-related background jobs to be scheduled, changed, or deleted</td>
</tr>
<tr>
<td></td>
<td>Key users are often ordinary end users who dedicate a certain percentage of</td>
<td>• Perform error handling of background jobs</td>
</tr>
<tr>
<td></td>
<td>their time to the key user role.</td>
<td>• Serve as the first point of contact for end users. Ideally, end users should</td>
</tr>
<tr>
<td></td>
<td></td>
<td>contact their corresponding key user before creating an incident.</td>
</tr>
</tbody>
</table>
3 LIFECYCLE OF JOB MANAGEMENT

This section provides a general description of the lifecycle phases for the implementation of a Job Management concept. The modular approach used by the Job Management suite in SAP Solution Manager guarantees flexibility; you can implement entire features or just the specific components you want. Consider each implementation task as a separate project according to the typical lifecycle phases of the Run SAP Like a Factory methodology.

Project approach
When implementing new features into running environments, it is essential to adopt a carefully planned and well-structured approach. For the implementation project, you need to consider the following factors:

- Project plan and time schedule
- Organizations involved
- Motivation and aims
- Tools to used
- Roadmaps and Milestones

SAP Solution Manager provides technical support for each phase of the project. Particularly a predefined roadmap is available.

3.1 Plan Phase

In this phase, you set up the project and create the project blueprint. The project setup phase is the first step in the Job Management implementation project.

3.1.1 Preparation

You need to identify the benefit case you want to realize with the planned JM implementation. This includes technical issues and project management topics. You should consider the following factors:

- Financial impact caused by the current solution
- Current pain points
- Job governance options
- Scheduling options (SAP BPA or SAP Scheduler)
- ITSM connection method

You should consider changes to jobs as changes to a running system. Therefore, you need to ensure job requests managed centrally and in a standardized way (ITSM concept).

Project Outline
The following steps represent a typical approach to defining and documenting the project outline:
1. Determine the project team members and their responsibilities.
2. Identify potential pain points based on evaluation and reporting of your current JSM scenario.
3. Identify factors that could potentially increase the required effort and costs for the project.
4. Create a list of departments, areas, and teams that are affected by the project and identify the relationships between them.
5. Define starting points and initial timelines.
6. Define project milestones.
7. Identify the tasks that you can perform in parallel, that is, tasks that are not dependent on each other.
8. Identify the required resources and who can provide them.
9. Document the software cycles in related systems.

Potential Pain Points
The most important step in this phase is to identify and plan for potential pain points that might occur later in the project. You need to analyze your current JM scenario, including error logs, feedback from users, and so on, from both a technical and business-related perspective.

A thorough analysis should consider the following questions:
- Which users can schedule jobs, and in what manner? Is this an automatic or manual process?
- How many new jobs or changes are made, how often are they made, and who makes them?
- How many regular or irregular periodic jobs exist? Which users generate them?
- What are the most important jobs?
- Are there job chains or jobs that are dependent on each other?
- Where and when is there parallel processing?
- Which jobs generate a large amount of redundant data? How many of these jobs exist? How can I find them?
- How do I remove jobs created by former members of staff?
- Which jobs generate errors? What are these errors? How are these errors identified and how quickly?
- Where is information regarding jobs available?
- Are there time frames, such as a Period-End Closing, or planned maintenance, that need to be handled separately?
- Who is responsible for Job Management?

Custom Development
As part of the planning phase, you need to establish whether custom developments are required to fulfill the demands of the project. For example, you might need to develop the following features:
- Input fields in user forms
- Possibilities for applying naming conventions
- Changes to standard job request forms
- Specific dashboards for reporting

Defining these changes can take time because you need to consult different parties to find the best solution. You also need to make sure the necessary development resources as well as suitable test and development landscapes are available.
Summary

When you have defined the project, the following aspects should be summarized and documented in SAP Solution Manager:

- Job Management functions and processes that you aim to implement
- Custom developments required for the project
- Technical environment
- Implementation method
- Test methods
- Knowledge transfer and alignment
- Project goals and deliverables
- Timelines and milestones
- Involved teams and organizations
- Standards and roadmaps

This information forms the foundation for the project and should be continuously expanded during implementation.

3.1.2 Blueprint

You need to create detailed process and functionality-oriented technical documentation based on the results of the project setup phase. Identify your requirements for the following areas:

<table>
<thead>
<tr>
<th>Area</th>
<th>Key Requirements to Identify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Governance</td>
<td>How to control jobs scheduled by end users</td>
</tr>
<tr>
<td>Job Requests and processing</td>
<td>What job request processes to implement and how to customize them</td>
</tr>
<tr>
<td>Job Documentation</td>
<td>How to document jobs and how to customize the documentation</td>
</tr>
<tr>
<td>Job Scheduling</td>
<td>Whether to use SAP Solution Manager or integrate SAP BPA</td>
</tr>
<tr>
<td>Job Monitoring</td>
<td>The key tasks for the monitoring teams and what target objects</td>
</tr>
<tr>
<td>Job Reporting</td>
<td>Whether to set up JM Health Check</td>
</tr>
</tbody>
</table>

Upload all documentation to the project in SAP Solution Manager. You can then refine the following project-related issues:

- Maintenance strategy for custom developments
- Support strategy for custom developments
- Key resources
- Plan and timeline for project and service

Technical Preparation

Before starting the implementation, you need to perform some basic technical preparation. Typically, this process involves the following steps:

1. Prepare the relevant tools, that is, SAP Solution Manager and Job Management specific things.
2. Ensure all software components are up to date on all systems. For example, SAP Solution Manager and SAP BPA systems, as well as all managed systems.
3. If necessary, perform any relevant updates.
4. Prepare users for the project and changes.
5. Collect all changes and generated objects in the relevant documentation.

Note
For the implementation, you need dedicated setup users with sufficient authorizations to configure SAP Solution Manager, SAP BPA, and the managed systems.

3.2 Build Phase

In this phase, you set up the technical infrastructure and implement all necessary changes according to the blueprint defined in the plan phase. You also implement processes and functions covered by the project.

3.2.1 Implementation

Follow the project plan and implement all project targets. Additionally, you need to address the following issues:

- Extending the authorization concept and developing template users in parallel
- Setting up and extending the monitoring and error handling concept
- Sizing for the development and production landscapes

Recommendation

Before implementing your JM concept in the production landscape, SAP strongly recommends testing your JM concept in a test landscape. As part of the test, you should set up and customize all required software, tools, and functionality that you plan to use, for example, job request processes or end user control, to check for problems or functional gaps.

As part of the implementation process, you generate and work with a manageable number of template users. The project team is responsible for executing each task according to the project plan, as this requires deeper technical knowledge. Typically, the implementation process consists of the following steps:

1. Set up all required software components.
   This requires a standard configuration in SAP Solution Manager and SAP BPA, which should be set according to the project's information base.
2. Configure specific features, such as end user control, naming conventions, queries, and data preparation.
3. Make changes to the job request forms and job documentation to ensure that they meet requirements as laid out in the project documentation.
4. Leverage your Job Management concept.
   For example, implement your job interception feature and notification concept.
5. Set up and activate your reporting capabilities.
   It is important to develop your reporting concept in coordination with your technical expansion.
6. Test each function carefully to ensure the solution is functionally and technically faultless. Create a test plan and assign test cases to users.
3.2.2 Handover

The following tasks should be performed during handover:
1. Define a rollout plan to make sure the new scenario is uniformly integrated. The plan should provide information about key roles and responsibilities. All information should be centrally available.
2. Create training materials for any group using the new Job Management tools and establish an appropriate training plan.
3. Conduct comprehensive training for all employees who are affected by the new system.
4. Define a cutover plan to ensure that the changes are correctly transported to the production system. This includes correctly integrating the new changes into the existing monitoring, issue management, and troubleshooting processes.

3.3 Run Phase

In this phase, you finalize the cutover and roll out your new Job Management concept.

3.3.1 Cutover and Go-Live

Generally, the process of transporting the functionality from the test system to the production system should involve the following steps:
1. Check that the technical prerequisites are fulfilled
2. Transfer your new JM concept to the production system
3. Transfer the relevant authorizations
4. Transfer monitoring
5. Sign off
6. Activate JM Functionality

You can now run the recently implemented functionality together with all the features that were already in place before the implementation. Job requests are now created, monitored, and managed according to standardized procedures.

3.3.2 Control and Review

Now that the JM scenario is in place, you can run the tasks in the production system and compare the result of the implementation with the predefined project goals. Check your implementation against the following criteria:
- Job requests are processed within the timeframe defined in the Service Level Agreement?
- End users are satisfied with the solution?
- The Job Documentation and Job Request tools are customized appropriately?
- Monitoring and error handling solutions supported by Job Documentation and Alert Inbox are sufficient?
- If you are using SAP BPA, the job scheduling procedures (Solution Manager vs. SAP BPA) are sufficient?
During the Run phase, you should also have an ongoing reporting process in place. You can use the results to further improve your Job Management concept. SAP Solution Manager provides reporting functionality for this purpose. The Job Management Health Check enables you to see job execution data collected from selected managed ABAP systems in Web Templates. The job data is extracted to SAP Solution Manager and stored in BW InfoCubes.

3.3.3 Project Evaluation

Now that the implementation is complete, check whether you have achieved the expected benefits. Successful implementation results in reduced workload for background jobs, increased stability of background processing, more evenly distributed workload across servers, and increased throughput. Depending on the project goals, you should also see the following improvements:

- Decreased number of background processes
- Decreased number of users bypassing central scheduling
- Shorter time to find relevant job information
- Reduced number of manually scheduled or rescheduled jobs
- Shorter time to detect and process job incidents
- Reduced number of incidents
- Reduced reporting effort
- Increased background processing stability
- Reduced training effort

You can measure these effects using key performance indicators (KPIs), which you can combine to determine the success of the JM implementation and demonstrate the real business value provided. There are several technical KPIs that are reported in different applications, for example, EarlyWatch Alert (EWA), JM Health Check (HC), or Workload Monitor (transaction ST03N):

- **Workload**
  - Accumulated runtime of jobs (EWA and HC)
  - Number of jobs (EWA and HC)
  - Distribution of jobs across scheduling users (HC)
- **Stability of background processing**
  - Number of cancelled jobs (HC)
- **Workload distribution**
  - Batch workload distributed by time (EWA)
  - Distribution of jobs per delay (HC)
  - Distribution of jobs across application servers (HC)
- **Throughput**
  - Job runtimes (Workload Monitor)
  - Distribution of jobs per duration (HC)
  - Distribution of jobs per delay (HC)

Which KPIs you use for your evaluation depends on the focus of the implementation project.

**Close Project**

After evaluating the project and determining the success of the implementation, you can close the project.
3.4 Optimize Phase

In this phase, you establish a clear picture of the current situation, key objects, key execution users, and their relationships to applications. Continuous monitoring and reporting is an important part of a Job Management concept, which allows you to identify areas of weakness and continuously improve your system. You can use the reporting and trend analysis capabilities in SAP Solution Manager for this purpose.

Some important key figures are as follows:
- Number of job executions per time unit
- Number of different jobs
- Number of cancelled jobs
- Number of users that schedule jobs
- Number of jobs per server

To form a basis for the optimization, you should be familiar with some of the broader issues related to Job Management, for example:
- Resource management
- Calendar management
- Naming convention
- Documentation matters

The aim of an optimization is to improve any of these key figures. Optimizing your Job Management concept involves two key phases:
- Cleansing
  Aims to reduce the number of unnecessary jobs
- Optimization
  Aims to improve the execution of jobs by focusing on identified pain points

---

**Figure 8: Optimization of Job Management**

- **Job Management Concept Creation**
  - Create Operations Handbook
  - Define Escalation-path and error-handling procedures
  - Define Job Documentation Form
  ...

- **Job Schedule Cleansing**
  - Possibly discontinue:
    - Regularly canceling jobs
    - Jobs processing outdated data
    - Possibly lower frequency of jobs with high frequency
  ...

- **Job Schedule Optimization**
  - Possibly:
    - Optimize long-running jobs
    - Reschedule jobs to at other times
    - Reschedule jobs to other servers
    - Parallelize job processing
  ...

---
Cleansing

The cleansing process involves identifying and discontinuing jobs that are redundant with the aim of running as few jobs as possible. This task is easier if each job has a detailed description containing information about the validity of the job. If you operate according to the SAP Standard for Job Management, all jobs that are running on your systems should already be documented. Using SAP Solution Manager, you can import existing jobs from managed systems into the Job Documentation tool. After importing the jobs, you can edit each job accordingly and add any missing information to the documentation. The cleansing process helps to optimize the overall job scheduling process, resulting in more efficient use of hardware resources and reduced bottlenecks. Often, cleansing and initial documentation are combined. Rescheduling is supported by the Job Gantt Chart, which can be accessed from the Job Management Work Center task bar. This function checks the job distribution on the involved system and helps you to find a free time slot to reschedule the job.

Optimization

Optimization is the process of improving the performance of a single job through technical or application-based changes. The job's runtime and time components can be analyzed using the standard SAP trace functionality, either by running Performance Analysis (transaction ST05) for SQL analysis or Single Transaction Analysis (transaction ST12) for ABAP. Additionally, SAP Solution Manager offers enhanced BI reporting functionality that can be used to run long-term analyses of job runtimes. You can use this information as a basis for rescheduling decisions.

Recommendation

Continuously update your job documentation to ensure optimum operations and maximum benefit across the entire lifecycle of your JM solution. SAP BPA collects statistics regarding jobs and job chains automatically, which enables you to react if something goes wrong. You can also use these statistics to help you make rescheduling decisions. Issues identified during job scheduling optimization can also lead to optimized job monitoring settings and changes to the error handling concept, for example, if you discover that the instructions for resolving errors are not adequate.

For further support in optimizing your JM concept, SAP provides a service SAP ESRV Job Scheduling Management as part of SAP Premium Engagements, for example, SAP MaxAttention.
4 DRIVING CONTINUOUS IMPROVEMENT

4.1 Quality Assurance Tasks

From a quality management perspective, the key tasks are as follows:

- Job schedule optimization and job schedule cleansing
- Reduction of media breaks and central administration
- Central management of job scheduling
- Integration of job requests into monitoring and alerting processes
- Maintenance of job documentation
- One-tool approach for job scheduling
- Standardization of job requests and documentation

4.2 Quality Targets and KPIs

The following quality targets are important to the maturity of your solution documentation management and drive value recognition of your IT department:

- Improve efficiency
- Improve effectiveness
- Improve job management transparency and governance

To assess the quality of the job management process, clearly-defined parameters and measurable objectives are required. Key parameters should be collated and evaluated in regular reports. The historical data that is created in this way can be used to identify trends and derive the necessary measures to take.

The following table describes the main challenges for each quality target and which KPIs can be used to measure them:

<table>
<thead>
<tr>
<th>Quality Target</th>
<th>Main Challenges</th>
<th>KPIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve efficiency</td>
<td>• Reduce resource consumption significantly by appropriately setting up the</td>
<td>• Trend in number of resources engaged in job management</td>
</tr>
<tr>
<td></td>
<td>concept. This includes reducing media breaks and increasing centralized job</td>
<td>• Ratio of automatically scheduled jobs to manually scheduled jobs</td>
</tr>
<tr>
<td></td>
<td>management.</td>
<td>• Frequency of cleansing activities and review of redundant jobs</td>
</tr>
</tbody>
</table>
## Quality Target

<table>
<thead>
<tr>
<th>Improve effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Appropriately setting up Job Management, including optimizing job chain dependencies, can improve the effectiveness of JM processes.</td>
</tr>
<tr>
<td>• Central control and alerting enable you to analyze problems faster and reschedule jobs if appropriate documentation is available.</td>
</tr>
<tr>
<td>Improve job management transparency and governance</td>
</tr>
<tr>
<td>• By appropriately documenting standards and using standardized, web-based request forms, you can dramatically improve visibility, handling, and prioritization of business-relevant processes.</td>
</tr>
</tbody>
</table>

## Main Challenges

<table>
<thead>
<tr>
<th>Improve effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Appropriately setting up Job Management, including optimizing job chain dependencies, can improve the effectiveness of JM processes.</td>
</tr>
<tr>
<td>• Central control and alerting enable you to analyze problems faster and reschedule jobs if appropriate documentation is available.</td>
</tr>
</tbody>
</table>

## KPIs

<table>
<thead>
<tr>
<th>Quality Target</th>
<th>Main Challenges</th>
<th>KPIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve effectiveness</td>
<td>• Appropriately setting up Job Management, including optimizing job chain dependencies, can improve the effectiveness of JM processes.</td>
<td>• Percentage of SLA requirements for business processes met</td>
</tr>
<tr>
<td>Improve effectiveness</td>
<td>• Central control and alerting enable you to analyze problems faster and reschedule jobs if appropriate documentation is available.</td>
<td>• Trend in business outage after central job management setup</td>
</tr>
<tr>
<td>Improve job management transparency and governance</td>
<td>• By appropriately documenting standards and using standardized, web-based request forms, you can dramatically improve visibility, handling, and prioritization of business-relevant processes.</td>
<td>• Frequency of reviews for important jobs related to business processes</td>
</tr>
<tr>
<td>Improve job management transparency and governance</td>
<td></td>
<td>• Percentage of business-relevant jobs completed in time window</td>
</tr>
</tbody>
</table>

| Improve job management transparency and governance | • By appropriately documenting standards and using standardized, web-based request forms, you can dramatically improve visibility, handling, and prioritization of business-relevant processes. | • Percentage of jobs documented according to policy/standard |
| Improve job management transparency and governance | | • Percentage of jobs failed for which there is no documentation |
| Improve job management transparency and governance | | • Trend in time required for job requests by business users |
| Improve job management transparency and governance | | • Percentage of failed jobs that automatically lead to an incident vs. sum of all failed jobs |
5 TRAINING

The following training courses are available:

E2E300 - Business Process Integration and Automation Management

This course covers how business processes running in a solution landscape should be supported as part of a Run SAP like a Factory concept. It also explains the concept of Business Process Operations and its related roles and tools.

Course Content:

- Introduction to Business Process Operations
- Job Management, including using the job request process and Job Documentation in SAP Solution Manager
- Business Process and Interface Monitoring, including using Business Process Monitoring, BW Reporting for Business Process Monitoring alerts, and Business Process Analytics in SAP Solution Manager
- Data Consistency Management, including using Data Consistency Monitoring, Data Consistency Toolbox and Cross-Database Comparison in SAP Solution Manager and the tools for transactional correctness
- Business Process Improvement, including the usage of the BPO Dashboards in SAP Solution Manager
- Business Process Performance Optimization

Expert Guided Implementation Sessions

Expert Guided Implementation (EGI) is a proven delivery methodology. The methodology balances the combination of training, practical experience, and expertise on demand. The focus is to enable the customer to execute complex activities with the help of SAP experts. It is important that during the delivery itself, the activity is executed as described in the delivery slot. Examples activities include performing an update, building a Customizing, or executing a service.

Expert Guided Implementation enables you to execute activities without being a subject matter expert. The methodology closes the gap between classroom training and consulting. Expert Guided Implementation provides guidance for the execution phase of your project.

The goal is to execute all relevant steps that are necessary to complete a defined activity during the delivery time of Expert Guided Implementation. After the delivery, the targeted activity should be complete.

For an overview of available EGIIs, see the Instructor led learning offerings from SAP Enterprise Support Academy on SAP Support Portal.
6 FURTHER INFORMATION

<table>
<thead>
<tr>
<th>Documentation Type</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support Portal</td>
<td><a href="#">SAP Solution Manager 7.2 Processes</a></td>
</tr>
<tr>
<td>SAP SCN Wiki</td>
<td><a href="#">Job Management on SCN Wiki</a></td>
</tr>
<tr>
<td></td>
<td><a href="#">FAQ: Job Management in SCN Wiki</a></td>
</tr>
<tr>
<td>Ramp-Up Knowledge</td>
<td><a href="#">Job Management on Demo System Landscape</a></td>
</tr>
<tr>
<td></td>
<td><a href="#">Demo Recordings for JM on 7.2</a></td>
</tr>
<tr>
<td>SAP Help</td>
<td><a href="#">Job Management 7.2 on SAP Help Portal</a></td>
</tr>
<tr>
<td></td>
<td><a href="#">Batch Scheduling on SAP Help Portal</a></td>
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</tbody>
</table>