SAP Solution Manager 7.2 – Test Suite
Scope and Effort Analyzer (SEA)

Solution Management, DBS, SAP SE
February 2018
SAP Solution Manager 7.2 Test Suite
Agenda

1. SAP Solution Manager 7.2 – Test Suite Overview

2. SAP Solution Manager 7.2 Test Suite – Scope and Effort Analyzer (SEA)
   - Introduction and Motivation
   - SEA Overview
   - SEA Prerequisites
   - SEA create Analysis
   - SEA view Analysis results
   - SEA example for SAP transaction including modifications and custom code

3. More Information for Customers and Partners

4. Appendix
   - Details about BPCA and SEA Prerequisites
SAP Solution Manager - Test Suite
A full-blown application for manual / automated testing and change impact analysis

**Functional Scope**
- Manual and automated functional tests
- Automated change impact analysis of maintenance activities for test scope optimization of regression tests
- New requirements triggering semi-automated test planning for user acceptance tests and functional integration tests
- High degree of test automation possible
- Supports agile development approach within requirements-to-deploy process through Focused Build for SAP Solution Manager
- Seemlessly integrated with SAP Solution Manager Process Management, Solution Documentation, ChaRM, ITSM, ...

**SAP and non-SAP Solutions**
- SAP Business Suite
- SAP S/4HANA (On-Premise, Cloud Edition)
- Non-SAP applications (On-Premise, Cloud)

**Integration**
- Test system refresh
- Partner: test data identification, validation and provisioning
- Partner: test automation tools

**Single Source of Truth**
- All related information in 1 central SAP Solution Manager system
- No complex data replications

The Test Suite of SAP Solution Manager 7.2 is a comprehensive test solution fitting the needs for the vast majority of SAP customers
SAP Solution Manager – Test Suite

Capabilities

Solution Documentation
- Executable Library
- Process Step Library
- Business Processes

Change Impact Analysis
- Scope and Effort Analyzer (SEA)
- Business Process Change Analyzer (BPCA)

Test Cases
- Manual Tests
- Automated Tests

Test Plan Management
- Test Plan
- Test Packages
- Test Sequences
- Tester assignment

Test Execution
- Manual Test Execution
- Automated Test Execution
- Defect Management

Test Suite Analytics
- Gap reports
- Status reports
- Progress reports
- Dashboard

Test Data
- SAP TDMS
  - Lean test system setup and refresh
- Test Data Container (TDC)
  - Test data storage for manual and automated tests
- DeceSoft DTD (test data identification, validation and provisioning)

Test Automation Framework
- SAP Test Suite - CBTA (Component Based Test Automation)
  - MicroFocus UFT
  - WorkSoft Certify
  - Tricentis Tosca
  - other 3rd party

Supported UI technologies by CBTA: SAPGUI, WD-ABAP, CRM Web-Client, SAPUI5, Fiori, …

Partner test tools: SAP and non-SAP UI technologies

Test scope estimation before upgrade
Test scope optimization during change events (fix, enhance, innovate, upgrade)
SAP Solution Manager - Test Suite
Test Suite for SAP S/4HANA

• SAP Solution Manager 7.2 – Process Management will be used to import SAP Best Practices and document business processes used in S/4HANA (On-premise or Cloud edition)
• SAP Solution Manager 7.2 – Test Suite will be used for manual and automated tests of implemented or changed business processes for all functional test types

- Business Processes are acticated from SAP Best Practices and/or customer defined process implementation
- Business Processes are based on SAP standard software and optional custom code, modifications and integrated partner apps

- Business Processes are activated from SAP Best Practices plus limited extension options
- Business Processes are based on SAP standard software and optional extensions using white-listed APIs and partner apps
## Most Common Vendors for SAP-Centric Test Management

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<thead>
<tr>
<th>Functional Test Organization</th>
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<th>Micro Focus*</th>
<th>Other vendors</th>
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<td>Fortify</td>
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</table>

**Legend**

- SAP Solution Manager and complementing tools
- Alternative products with overlapping functionality to SAP Solution Manager (requires additional integration and on-going data replication)

* Former software division of Hewlett Packard Enterprise is now part of Micro Focus
SAP Solution Manager 7.2 – Test Suite
Delivers all you need

✓ On-premise, Cloud, Hybrid: Supports functional tests for on premise, cloud and hybrid solutions
✓ All under one Roof: no integration setup and ongoing data replication required
✓ Integration: seamless integrates with project management, process management, change and release management, defect and incident management, custom code management
✓ Requirements to Deploy: Supports waterfall and agile development approaches, including Enterprise DevOps
✓ Manual Tests: Easy to use manual tests for business users
✓ Automated Tests: for all SAP and non-SAP processes – certified integration of market-leading partner test tools for test planning, execution and reporting
✓ Test Data: semi-automatically identify, validate and provide suitable test data for all tests
✓ Change Impact Analysis: reduce test scope based on software changes and smart calculations
✓ Test Planning: automatically proposes test plan fitting the needs of the upcoming test cycle
✓ Analytics: automatically provides full transparency of test status and test progress for all involved parties
SEA Introduction and Motivation
Main challenges managing EHP Projects

Based on customer feedback:
Information on project costs & efforts is essential to better plan and run maintenance events.

Main issues to address challenges

- **No Transparency**
  - Missing transparency what custom code and modifications are really used

- **Sandbox upgrade required**
  - High costs for evaluation because upgrade of sandbox system is required before project start

- **Set-up efforts for existing analysis tools**
  - Significant implementation efforts for Business Process Change Analysis used for Test Scope Optimization

**Customers’ perceived challenges**

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<th>Target release: Any</th>
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<td>Planning phase</td>
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<tr>
<td>Justify budget for project/value proposition</td>
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<tr>
<td>Project management</td>
<td></td>
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<tr>
<td>IT infrastructure/sizing</td>
<td></td>
</tr>
<tr>
<td>Minimize downtime</td>
<td></td>
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<tr>
<td>Modification adjustment</td>
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<tr>
<td>Efficient testing</td>
<td></td>
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<tr>
<td>End-user training</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
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</table>

Number of projects: 104

0% 25% 50% 75% 100%
Customer requirements for improved planning of EHP projects

1. Transparency about change impact of EHP deployments **before** physical installation

2. **Reliable effort estimation** for major development adjustments and test activities

3. **Tailored impact analysis** for custom code and modifications

4. Test scope optimization with **significant reduced test scope and test effort**

5. Test plan for **impacted business processes** including custom code and modifications

6. Simple guided tool based procedure **without significant preparation effort**
SEA Overview
SAP Solution Manager – Scope and Effort Analyzer (SEA)

Customer benefits

• Early upgrade information before deployment of SAP SP / EHP

• No additional usage or license costs for customers with SAP Enterprise Support contract

• Dashboards showing calculated efforts for required ABAP code adjustments and regression tests

• Detailed analysis to enable project preparation for Development / Test Managers
SAP Solution Manager - Scope and Effort Analyzer (SEA)
Approach

1. SAP Solution Manager
   - User enters system for planned SP / EHP deployment
   - User enters target SP / EHP
   - Information send to SAP

2. SAP Support Portal
   - Calculation of SAP objects (BOM) for target Enhancement Package
   - SAP sends BOM back to SAP Solution Manager

3. SAP Solution Manager
   - Usage statistics
   - Taylored impact analysis for custom code / modifications
   - Effort calculation
   - Executable Library
   - BPCA TBOM generation
   - Test Scope and Effort Optimization

4. Customer Project Team
   - Result review through overviews
   - Assessment of analysis details
   - Parameter variation for result optimization
Project Planning and Project Execution for planned SP / EHP Deployments

**Project Planning**

**Scope and Effort Analyzer (SEA)**
- Inventory of updated SAP objects by Application Component Hierarchy and Object Type
- Information about impacted custom developments and modifications
- Information about estimated code adjustment effort
- Information about impacted business processes
- Information about test scope optimization, expected test effort, distribution between manual / automated tests and missing test cases

**Project Prep**

**Optional activities**
- Creation of missing test cases
- Reduction of custom developments and modifications
- Identification of required developers for code adjustments
- …

**Project Execution**

**Custom Development Management Cockpit (CDMC)**
- Conflict resolution for custom developments

**ABAP Test Cockpit (ATC)**
- Analysis of ABAP code issues

**Business Process Change Analyzer (BPCA)**
- Test scope optimization and test plan generation

**Test Suite**
- Test case creation and assignment to Solution Documentation
- Test plan management, tester assignment
- Test status reporting and sign-off

**Note**: more applications can be used for further analysis
SEA Prerequisites
Scope and Effort Analyzer (SEA)

SEA Changes with SAP Solution Manager 7.2

- SAP Maintenance Optimizer (SAP Solution Manager 7.1) was replaced with **SAP Maintenance Planner** (SAP Solution Manager 7.2)

- SAP Maintenance Planner is a service provided via the SAP Support Portal: [https://apps.support.sap.com/sap/support/mp](https://apps.support.sap.com/sap/support/mp)

SAP Maintenance Planner

SAP Maintenance Planner – User Guide
Scope and Effort Analyzer: System roles in analysis landscape

**Managed Systems**

- **DEV**
  - Role: System to read custom developments and modifications
  - Role: System used for test scope optimization activities (incl. calculation of TBOMs)

- **QAS**
  - Role: System to read usage statistics (workload statistics and UPL/SCMON)
  - Read and trusted RFC

- **PRD**
  - Read RFC

**Solution Manager**

**Support Portal**

- Role: System to calculate target software stack and return ABAP object piece list

**Firewall**
BPCA and SEA: Prerequisites

**Solution Documentation**
- Test Suite Attribute: BP Test
- Custom Attribute: BP Prio

**SAP Solutions – usage data**
- Usage and Procedure Logging (UPL)
- ABAP Call Monitor (SCMON)

**Usage data transfer**
- SAP Solution Manager - Configuration
- Section: Custom Code Management

**BPCA Self Check**
- Checks BPCA prerequisites in SAP Solution Manager and managed systems
- Availability of statistical data and data flows

**Semi-dynamic TBOM**
- Where: Exe Library
- How: Background Job to generate semi dyn.TBOMs using UPL or SCMON data

**Dynamic TBOM**
- Where: high-priority process steps

**Test Automation**

**Completeness Reports**
- Check: Process Steps without (dynamic) TBOMs
SEA Analysis Creation
SEA Analysis Creation

Activities to create a new SEA Analysis

• First: Maintenance Planner: create Maintenance Plan for selected SAP system. Change event: SP or EHP

Activities to create a new SEA Analysis

• Second: SEA: Guided activity with 5 steps
SEA Analysis Creation

Create new SEA Analysis
SEA Analysis Creation

Step 1: Select System and Maintenance Plan

Enter Analysis Name

Purpose

In this step, you define the system to which you plan to upgrade to a newer software version, for which you wish to create the impact analysis. You enter the name of this analysis, and assign a Maintenance Plan to your selected system. This Maintenance Plan specifies the target software version to which to update the selected system. The application calculates the software package required for this update, and identifies all ABAP repository objects that are changed by the update.

Activities of this view

- Analysis
  - Enter name for this analysis.
  - Enter the System ID (SID) to be analyzed, and its version.
  - Enter the Maintenance Planner Transaction ID with the target S/4/HANA for the selected system.
  - Enter Extended System ID.
  - Enter Extended System ID.
  - Enter Product Version for Analysis.
  - Enter Maintenance Planner Transaction ID.

Note: To conduct a Scope and Effort Analysis; you have to process all steps of the Maintenance Planner transaction that you created to plan the software change. It is important that you correctly enter the requested information for the maintenance transaction in area “Plan”, for all steps from “Define Change” to “Complete”. In the final step, “Complete”, select the button “Get to Complete”, so that the status of the Maintenance Plan is “Completed”. Scope and Effort Analysis Transactions only return maintenance transactions with this status. You can start a new maintenance plan at any time.

You can access Maintenance Planner with your user, using the following link:
https://sap.support.sap.com/app/support
SEA Analysis Creation

Step 2: Specify additional Systems

Purpose

In this step you specify the additional systems from which the application can read required information and to perform certain calculations. Please read the detailed descriptions for each system type which explains the purpose of this system and which systems you should usually use.

Additional information

The application will retrieve parts of the source code and generic statistic data from Info Server or the SAP Solution Manager business information framework. This requires that you assign the corresponding BTR extension to the Solution Manager authoring framework for these systems. If this is not done, the application will continue to the next step. To set the required BTR extensions you can use the global set-up procedures for Custom Code Management in the SAP Solution Manager Configuration.

Activities of this view

- Specify system to read custom developments and modifications. Fill the system ID (SCD) of the system from which the modifications and custom developments are selected for the change impact analysis.

  Note: Usually you should select the production system that shall be selected for this role as well. This ensures that only those custom developments are selected that are actually deployed in production. If you want to select the development system and to project work not yet released to production, you can choose other systems, such as development systems.
- Specify system to read usage statistics. Enter the custom ID (USC) for the system that contains all statistics about the actual usage of executable programs and other system data. If no such systems are selected:

  Note: This system has to be a production system because only those usages information exists.
- Specify system used for test scope optimization activities. Enter the system ID (USC) for the system on which information used to define test scope optimizations is generated.

Note: The technical bill of material (TBO) required for the test scope optimization will be generated on this system. This calculation will usually generate insignificant values on the selected systems. Therefore, we recommend using a test or quality assurance system for these activities. The assigned system has to have the same software configuration (product version, support package and custom developments) as the production system.
- Partner Checkboxes. This additional system is checked if all prerequisites are fulfilled. This check is triggered if the next step has to continue to the next step in the wizard guide. In case the checks indicate errors or warnings, the results are shown in checkboxes for each system type on this screen. Alternatively, you can also pass the function "Partner checks" to check and see the check results.
**SEA Analysis Creation**

**Step 3: Specify Solution Documentation**

**Purpose**

In this step you select the solution and branch that contains the solution documentation of your business processes, process steps and executables.

**Additional Information**

In case your company has not yet generated an executable library within the last month in the selected solution and branch, the executable library is generated automatically in the background for all logical components containing the SAP system used to read the usage statistics and the SAP system used for test scope optimization activities.

**Activities of this view**

- Select a solution and branch
  - Library Generation Branch: Branch that shall contain the executable library generation result (in most cases the maintenance branch)
  - Source Branch: Branch that contains the system used as source for usage data (in most cases the production branch)
- Select a change document to which the user is assigned, if changes in the branch can only be performed via change documents.
SEA Analysis Creation

Step 4: Specify Test Scope

**Purpose**

In this step you can select your preferred approach for Test Scope Optimization, which is calculated by BPCA in the background.

**Activities of this view**

- **Test Scope Optimization**
  
  In case you have already defined an Optimization Approach, you can select it for use during the subsequent background analysis. Please include a test coverage of 100% or less, such as 95%, which determines whether all impacted objects shall be included in the test scope.

- **Test Case Recommendation for creating Test Cases**
  
  The application can provide recommendations for creation of automated test cases. For this you can specify up to which test coverage percentage automated tests shall be considered. In addition, you can select a rule how to perform recommendations for the remaining percentage to cover 100% test coverage.
SEA Analysis Creation

Step 5: Review and start SEA Analysis creation
SEA Analysis Creation

Process log during SEA Analysis creation run

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<th>Status</th>
<th>Description</th>
<th>Mandatory</th>
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<tr>
<td></td>
<td>Calculate “Updated SAP Object” area results</td>
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<tr>
<td></td>
<td>Get custom code and modification results</td>
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<tr>
<td></td>
<td>Get Similarity (Clone Finder) results</td>
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<tr>
<td></td>
<td>Process Similarity (Clone Finder) results</td>
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<td>Get SAP reference results</td>
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<tr>
<td></td>
<td>Process SAP reference results</td>
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<td></td>
<td>Generate Executable Library</td>
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<td>Check usage data availability</td>
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<td>Enrich custom code object list with usage data</td>
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<td>Calculate “Custom Code” area results</td>
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<td>Calculate “Modification” area results</td>
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<tr>
<td></td>
<td>Generate TBD/VA files</td>
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SEA Analysis

SEA Analysis creation job finished and SEA Analysis results are now available
SEA view Analysis results
SEA – view Analysis results
Entry screen

SEA Analysis ready for result analysis
SEA – view Analysis results

Navigation to analysis overview and detail results

Entry screen

Summary

Overview level
(Project Team, Project Manager)
- Modifications / Custom Developments
- Test Management
- Updated SAP Objects

Detail level
(Dev.Manager, Test Manager)
- Details Modifications / Custom Developments
- Details Test Management
- Settings and processing log
SEA Result Analysis
Summary (1)

Analysis: EHP7 Project AGS_BS_SEA + XUQ_DELTA

Planned SAP Update
System: XUQ
Target Product Version: EHP7 FOR SAP ERP 6.0

Estimated Efforts (days)
Development and Unit Test: 298.45
Regression Test: 11.85
Disclaimer: not all project efforts are listed here

Impact to Custom Developments and Modifications (number of objects)
- Adjustment not needed
- Adjustment proposed
- Adjustment required

Export

Table:

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<th>Recommendation</th>
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<td>0.02 %</td>
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SEA Result Analysis
Summary (1)
SEA Result Analysis
Updated SAP Objects (1)
SEA Result Analysis
Updated SAP Objects (1)
SEA Result Analysis
Overview: Modifications / Custom Developments (1)

![Chart showing modifications and development efforts]

### Modifications
- **Impact to Modifications (number of objects)**
- **Development and Unit Test Efforts (days)**
  - Deleted modifications (SPC0 and SPAU)
  - Impacted DDIC modifications (SPC0)
  - Impacted unused modifications (SPAU)
  - Impacted unused modifications (SPAU)
  - Modifications without impact

### Development and Unit Test Efforts

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<th>Number of objects (shared in %)</th>
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<th>Estimated Unit Test Efforts (days)</th>
<th>Total Efforts (days)</th>
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<td>100.00 *</td>
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<td>5.61 *</td>
<td>2.67</td>
<td>0.67</td>
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<td>0.05</td>
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SEA Result Analysis
Overview: Modifications / Custom Developments (2)
SEA Result Analysis
Overview: Test Management (1)
SEA Result Analysis
Overview: Test Management (2)
## SEA Result Analysis
### Overview: Test Management (3)

<table>
<thead>
<tr>
<th>Test Scope and Effort with TSO - Full Scope versus Custom Code and Modifications</th>
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<tr>
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<tr>
<td>Test Effort - manual tests</td>
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<td>Test Effort - automated tests</td>
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<td>Test Effort - missing tests</td>
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SEA Result Analysis
Overview: Test Management (4)
SEA view Analysis results
Detail level – Modifications / Custom Developments
SEA Result Analysis
Details: Modifications / Custom Development (1) - Modifications
SEA Result Analysis
Details: Modifications / Custom Development (2) - Modifications

![Chart showing impacted SPAU modifications by application with a pie chart and table]

### Table: Impacted SPAU Modifications by Application

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Impacted SPAU Modifications (%)</th>
<th>Impacted SPAU Modifications</th>
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<td>Basis Components</td>
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<td>CA</td>
<td>Cross-Application Components</td>
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<td>IS</td>
<td>Industry-Specific Components</td>
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<td>PY</td>
<td>Payroll</td>
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<td>Financials</td>
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SEA Result Analysis
Details: Modifications / Custom Development (3) - Modifications
# SEA Result Analysis

Details: Modifications / Custom Development (4) - Modifications

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<th>[Standard View]</th>
<th>Export</th>
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## List of Impacted Modifications

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<th>Main Object Name</th>
<th>Sub-Object Type (LINU)</th>
<th>Sub-Object Name</th>
<th>Impact Category</th>
<th>Adjustment Category</th>
<th>Used</th>
<th>Changed by</th>
<th>Changed on</th>
<th>Without Modification Assistant</th>
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<td>Without Modification Assistant</td>
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<td>HRUINFL_CE_CUSMDES_SCRIP</td>
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<td>Changed on</td>
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SEA Result Analysis
Details: Modifications / Custom Development (5) – Custom Developments
SEA Result Analysis
Details: Modifications / Custom Development (6) – Custom Developments
SEA Result Analysis
Details: Modifications / Custom Development (7) – Custom Developments

Adjustment Efforts by Packages [days]

View: [Standard View] ▼ Export ▼

<table>
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<th>Adjustment Required [days]</th>
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## SEA Result Analysis

Details: Modifications / Custom Development (8) – Custom Developments

### List of Impacted Custom Developments

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<tr>
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<th>Main Object Name</th>
<th>Sub-Object Type (LIMU)</th>
<th>Sub-Object Name</th>
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<th>Referenced SAP Objects Changed</th>
<th>Referenced to Obsoleted/Unreleasable SAP Functions</th>
<th>Referenced SAP Objects Deleted</th>
<th>Custom Code is SAP Clone</th>
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### List of Impacted Custom Developments

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<th>Main Object Type (R3TR)</th>
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SEA view Analysis results
Detail level – Test Management
 SEA Result Analysis
Details: Test Management (1) – Tab 1: Result Overview
SEA Result Analysis
Details: Test Management (2) – Tab 1: Result Overview
SEA Result Analysis
Details: Test Management (3) – Tab 2: Test Scope Optimization Ranking
SEA Result Analysis
Details: Test Management (4) – Tab 2: Test Scope Optimization Ranking
### SEA Result Analysis

Details: Test Management (5) – Tab 3: Business Process Hierarchy

![Image of Business Process Hierarchy](image-url)

#### Business Process Hierarchy

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<th>In Scope</th>
<th>Rank</th>
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<th>Cum Total Effort</th>
<th>Test Effort</th>
<th>Manual Effort</th>
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*Note: The table is interactive and allows for detailed analysis of each node.*
SEA Result Analysis
Details: Test Management (6) – Tab 4: Test Case Recommendations
### SEA Result Analysis

Details: Test Management (7) – Tab 4: Test Case Recommendations

#### Test Cases: Recommendation Details

<table>
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<tr>
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<th>Scenario</th>
<th>Process</th>
<th>Process Step</th>
<th>Executable</th>
<th>Number of Test Cases</th>
<th>Test Case</th>
<th>Test Case Recommendation</th>
<th>Recommendation Effort in Hours</th>
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<td>Sales</td>
<td>0_Order-to-Cash</td>
<td>Create Sales...</td>
<td>0</td>
<td>New Automated Test Case</td>
<td></td>
<td>3</td>
<td>18</td>
<td>17.25</td>
<td>10.75</td>
<td></td>
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<tr>
<td>12</td>
<td>71.32</td>
<td>Sales</td>
<td>0_Order-to-Cash</td>
<td>Create Sales...</td>
<td>0</td>
<td>New Automated Test Case</td>
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<td>3</td>
<td>18</td>
<td>17.25</td>
<td>10.75</td>
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<td></td>
</tr>
</tbody>
</table>
SEA example: SAP transaction including modifications and custom code
SAP Transaction with Modifications and Custom Code

Example: SAP Transaction F110 Automatic Payment Transactions

1) Situation in customer SAP ERP system

SAP Transaction F110

Main Program SAPF110V

Modification

Include F110VI00

Call ZSAPF110S

(before: Call SAPF110S)

Custom Code

Report ZSAPF110S

Custom Code

Include ZF110STOP

Custom Code

Include ZF110SFB0

SAP...

SAP...
## SAP Transaction with Modifications and Custom Code
### Example: SAP Transaction F110 Automatic Payment Transactions

### 2) Usage Statistics in customer SAP ERP system

<table>
<thead>
<tr>
<th>SAP Transaction F110</th>
<th>ST03N</th>
<th>UPL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Program SAPF110V</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>Include F110VI00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Call ZSAPF110S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(before: Call SAPF110S)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Report ZSAPF110S</td>
<td></td>
<td>★</td>
</tr>
<tr>
<td>Include ZF110STOP</td>
<td></td>
<td>★</td>
</tr>
<tr>
<td>Include ZF110SFB0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Indirect– UPL column „name of processing block“ shows executed Forms / Methods / Report Calls. BPCA functionality to determine Includes which contains executable units, e.g.:

- Module BUPLA_PRUEFEN → UPL: yes
- SUBMIT ZSAPF110S → UPL: yes
### SAP Transaction with Modifications and Custom Code

**Example: SAP Transaction F110 Automatic Payment Transactions**

#### 2) Usage Statistics in customer SAP ERP system

<table>
<thead>
<tr>
<th>Date</th>
<th>Changed</th>
<th>PID</th>
<th>Object Type</th>
<th>Object Name</th>
<th>O</th>
<th>P</th>
<th>TCODE/PROG</th>
<th>Type</th>
<th>Name of Processing Block</th>
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<tbody>
<tr>
<td>01.11.2013</td>
<td>00:00:00</td>
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<td>PROG</td>
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<td>BIUPA_KONTROLLEN</td>
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<td>SAPF110V</td>
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<td>SAPF110V</td>
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<td>F10V-FDEB</td>
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</table>
### SAP Transaction with Modifications and Custom Code

Example: SAP Transaction F110 Automatic Payment Transactions

#### 3) EHP7 object list and SEA Analysis Results

<table>
<thead>
<tr>
<th>SAP Transaction F110</th>
<th>EHP7</th>
<th>Impacted MODIF</th>
<th>Impacted CC</th>
<th>Test Mgmt. CC / MODIF</th>
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</thead>
<tbody>
<tr>
<td><strong>SAP Transaction F110</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Main Program SAPF110V</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Include F110VI00</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Call ZSAPF110S</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(before: Call SAPF110S)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ZSAPF110S</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ZF110SFB0</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ZF110STOP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SAP...</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SEA Customer Benefits
SAP Solution Manager – Scope and Effort Analyzer

Customer Benefits

**Hazzle-free analysis**
- Change impact analysis *without* physical SP or EHP deployment
- Simple Guided procedure in local SAP Solution Manager
- No external transfer of customer code to protect Intellectual Property

**Custom Code & Modifications**
- Tailored impact analysis for custom code and modifications
- Early estimation of project effort and required adjustment activities
- Overview on used and unused code based on reliable usage statistics

**Test Management**
- Automatic generation of Executable Library in Solution Documentation (if needed)
- Test Scope Optimization with significant reduced test scope and test effort
- Additional test plan for business processes including custom code & modifications
- Recommendations for missing test cases and process traces (BPCA TBOM)
SAP Solution Manager – Test Suite

More Information for Customers and Partners
Test Suite – more information for customers and partners

SAP Solution Manager WIKI – Test Suite

- Audience: customers and partners
- Positioning presentations
- How to configure and administration
- Tips and tricks
- Offline demos

# SAP Solution Manager Learning Resources Overview

## Available Learning Resources

### From Interest to Expert Knowledge

<table>
<thead>
<tr>
<th>Resources</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Management Competence</strong>&lt;br&gt;(Introduction)</td>
<td>Overview Videos&lt;br&gt;Virtual Roadshow&lt;br&gt;SAP Solution Manager for SAP S/4HANA</td>
</tr>
<tr>
<td><strong>Core Competence</strong>&lt;br&gt;(Key Value Chains)</td>
<td>Overview Publication&lt;br&gt;SAP Solution Manager Homepage&lt;br&gt;(support.sap.com/solutionmanager)&lt;br&gt;Processes, Product, Release, and Support Info&lt;br&gt;Ready-to-run solutions for SAP Solution Manager&lt;br&gt;Focused Solutions&lt;br&gt;System Landscapes&lt;br&gt;Private Cloud System (CAL), Public Demo System, Internet Demo System</td>
</tr>
<tr>
<td><strong>Expert Competence</strong>&lt;br&gt;(Functional Areas)</td>
<td>Expert Publication&lt;br&gt;Monitoring and Operations with SAP Solution Manager&lt;br&gt;Technical Documentation&lt;br&gt;Supported languages, browsers, and databases&lt;br&gt;Expert WIKIs&lt;br&gt;Functional Areas Expert Content&lt;br&gt;SAP Solution Manager Community&lt;br&gt;Blogs &amp; Questions&lt;br&gt;System Landscapes&lt;br&gt;Live Expert Sessions &amp; e-Learnings&lt;br&gt;Get empowered by the SAP Enterprise Support Academy&lt;br&gt;Classroom Trainings&lt;br&gt;Setup, configuration, and functional overview&lt;br&gt;Product Documentation&lt;br&gt;Application Help, Release Notes, Installation, Upgrade, and Security Guides</td>
</tr>
<tr>
<td><strong>Other Resources</strong></td>
<td>SAP Books&lt;br&gt;SAP.com&lt;br&gt;SAP Support Portal&lt;br&gt;Media Center&lt;br&gt;SAP Community&lt;br&gt;SAP Demo Systems&lt;br&gt;SAP ES Academy&lt;br&gt;SAP Education&lt;br&gt;SAP Help Portal</td>
</tr>
</tbody>
</table>

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Thank you.
Appendix
Details about BPCA and SEA Prerequisites
Prerequisites for **BPCA and SEA**

BPCA Self Check
BPCA Self Check
BPCA Self Check – Selection Screen

BPCA Self Check

Solution Documentation

* Solution: Business Solution

Managed System for TBOM Generation

* System: xuq
* Client: 800
* Branch: Maintenance

System with UPL/SCMON Data

* System: xuq
* Client: 800
Branch: Production
BPCA Self Check

Check Options

- Short date and time: 15.06.2016 16:45:23
- SAP Sybase user: WETTERSM
- SAP SolMan system: FQZ 210
- TDM system: XIQ / 800
- SCM On System: XIQ / 800
- TDM generation solution and branch: Business Solution / Maintenance
- UPL/SCMOn Solution and Branch: Business Solution / Production

Checks for SAP Solution Manager System

- Existence check for branch: Maintenance: OK
- Check the TDM system XIQ / 800 included in system landscape of branch Maintenance: OK
- Logical components found for XIQ and 800: 3
- SAP ERP Development System
- SAP ERP Quality Assurance System
- SAP ERP Production System
- Number of Systems per Logical Component:
  - SAP ERP 3
  - SAP ERP 3
  - SAP ERP 3
- Best matching logical component for XIQ and 800 is SAP ERP
- Authorization to read Process Documentation in Branch: OK
- Authorization for TDM Generation: OK
- Authorization to create BPCA Analysis: OK
- Authorization for BPCA Test Scope Optimization: OK

- Information:
  - Composite role SAP_BPCA_XE_COMP includes authorizations for BPCA TDM creation and BPCA analysis deployment
  - Composite role SAP_BPCA_ALL_COMP includes all required authorizations for BPCA TDM creation and BPCA analysis creation

Check availability of data from Usage Procedure Log and ABAP Call Monitor (SCMON)

- SCMON System: XIQ / 800
  - Check Read RFC against SCMON system: Destination: SM_XUQCLN7000_READ: OK
- SCMON Status:
  - SCMON active
  - SCMON Info No. 1: Status = X
  - SCMON Info No. 2: Fetching root information = X
  - SCMON Info No. 3: Job SCMON Control = X
- Status check: SCMON data extraction from SCMON system to SAP SolMan InfoCube
  - SCMON extractor is active
  - Last Status: OK
  - Status of last 20 extractions: OK: 20; Failed: 0
- Check MDX parser configured on SolMan System (required to read SCMON data): MDX Parser OK
- Check Reading of SCMON data for SCMON System in SAP SolMan IW InfoCube
  - SCMON data available in SAP SolMan InfoCube
  - First month with SCMON data: March 2016
  - Last month with SCMON data: June 2016
  - Total available months of SCMON data: 4
- Check available memory on BW system for reading of SCMON data
  - Reading profile parameter ztcrroll_extension_data via RFC destination: NONE
  - Value of profile parameter: 20480000.000
  - Reading profile parameter abap_heap_area_data via RFC destination: NONE
  - Value of profile parameter: 80000000.000
  - See SAP Note 2054368 for recommendations on memory settings for BW system
- Check SCMON system XIQ / 800 included in system landscape of branch: Production: OK
  - SAP ERP Development System
  - SAP ERP Quality Assurance System
  - SAP ERP Production System

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BPCA Self Check

4

Checks for TBOM System

- **TBOM system**: XUQ / 800

- **RFC destinations**:
  - Read RFC: SM_XUQCLNT800_READ
  - Trusted RFC: SM_XUQCLNT800_TRUSTED

- **Check of ST-PI Release/SP**: Failed
  - **Version**: 740 0000000003
  - ST-PI Version not sufficient for future SCM CN TBOMs: Minimum required Version: '2008_1_700 with SP14' or '740 with SP04'

- **Authorization checks for function modules to create TBOM**:
  - Authorization check for function module E2E_TESTING_AGENT_PFA: Destination: SM_XUQCLNT800_TRUSTED: OK
  - Authorization check for function module E2E_TESTING_AGENT_EXECHCK: Destination: SM_XUQCLNT800_READ: OK
  - Authorization check for function module E2E_TESTING_AGENT_UPL_CONVSAVE: Destination: SM_XUQCLNT800_TRUSTED: OK

- **Function Modules to read Transport Requests**:
  - Authorization check for function module E2E_TESTING_AGENT_TRCONV_Str: Destination: SM_XUQCLNT800_READ: OK

- **Function module to get information about Web applications**:
  - Authorization check for function module E2E_TEST_GET_BSP_APP_CRMFRAME: Destination: SM_XUQCLNT800_READ: OK

- **Available User Parameters**

  - No BPCA parameter found for user: WEFERSM
Prerequisites for **BPCA and SEA**
Technical Bill of Material (TBOM)
**Technical Bill of Material (TBOM):** is a list of technical objects, which are used when business processes are executed.

### Static TBOM Generation Approach
- **Advantage:** background job to generate all TBOMs without manual effort
- **Disadvantage:** less precision compared to dynamic or semi-dynamic TBOMs → not recommended by SAP

### Dynamic TBOM Generation Approach
- **Advantage:** exact list of objects that are used when executing a transaction in the context of a specific business process
- **Disadvantage:** high manual effort, if not combined with test execution (manual or automated)

### Semi-dynamic TBOM Generation Approach

- **UPL (Usage Procedure Logging) Data in PRD system**
- **ABAP Call Monitor (SCMON) usage statistics from Call Graph and Data Browser**
- **Where-used Index to identify DDIC objects like tables, etc.**

### Semi-dynamic TBOM
- **Advantage:** Background job to generate all TBOMs without manual effort
- **Disadvantage:** Table keys and variants of the same executable are not supported
BPCA and SEA: TBOM Types and Best Practice

<table>
<thead>
<tr>
<th>TBOM type</th>
<th>Precision</th>
<th>New with SAP Solution Manager 7.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic TBOM</td>
<td>Very precise</td>
<td></td>
</tr>
<tr>
<td>Semi-dynamic TBOM</td>
<td>Moderate to good</td>
<td>TBOM generation based on usage data provided by ABAP Call Monitor (SCMON)</td>
</tr>
<tr>
<td>Static TBOM</td>
<td>Not recommended to use</td>
<td></td>
</tr>
</tbody>
</table>

**Best Practice**

- **Mission critical business processes, process steps and assigned executables**
  - Make use of dynamic TBOMs
  - Flag processes with custom attribute „Business Process Priority“ with value „Prio 1“
- **All other non-mission critical business processes and process steps**
  - Whenever possible make use of dynamic TBOMs
  - Generate semi-dynamic TBOMS using SCMON data
Prerequisites for BPCA and SEA
Semi-dynamic TBOMs
BPCA and SEA – Data Flow for semi-dynamic TBOM Generation

SAP Solutions
- SAP ERP, SAP CRM, …
- SAP S/4HANA

Identify DDIC objects like tables via where-used index in QAS system

Transfer of usage data (UPL or SCMON) to SAP Solution Manager

SAP SolMan BW CCLM Cubes

Usage data analysis

List of all Executables of Executable Library

Solution Documentation (Executable Library)

Assign semi-dyn.TBOM to Executable of Exe-Lib
BPCA and SEA: Generation of semi-dynamic TBOM

Usage Procedure Logging (UPL) versus ABAP Call Monitor (SCMON) usage data

**Usage and Procedure Logging (UPL)**

- Objects in usage statistics w/o relationship

**Semi-dynamic TBOM generation**

- Programmatic code analysis of each executable
- Exclude code branches for TBOM not verified via UPL usage data

**ABAP Call Monitor (SCMON)**

- Executable 1
- Executable 2
- Executable …

- Objects in usage statistics with entry point

**Semi-dynamic TBOM generation**

- Compilation of 1) used objects for each executable identified by SCMON usage data plus
  2) Data Dictionary objects (tables, …)
- SCMON includes dynamic calls to other execution objects (not included in UPL approach)

X = exclude code branches containing objects not included in UPL (grey boxes)
Prerequisites for **BPCA** and **SEA**

Information about ABAP Call Monitor (SCMON)
The **ABAP Call Monitor** allows you to monitor the execution of ABAP procedures (function modules, method calls, forms) and their leading requests (business processes) in the live ABAP system in parallel to productive use. Using this tool, you can focus on usages of a business process that is initiated by a request entry point - such as a specific transaction, RFC call, URL request, or ABAP report.

As a result of this monitoring, you get a list of executed request entry points along with all ABAP procedures that have been executed under the umbrella of these entry points. The ABAP Call Monitor not only indicates that the procedure was called in the first place, but also provides an execution counter for each procedure.

1. **Display Data**
   - Requestor, like transaction VA01 and called objects, like Methods

2. **Display Call Graph**
   - Shows additional requests of the calling transaction
     - Update Task (German: Verbucher)
     - Remote Function Calls (RFC) within the same system
     - Batch jobs
ABAP Call Monitor

Function 1: Display Data

Use Case 1: Selection: Type “T” Transaction and Name “VA01”
ABAP Call Monitor
Function 1: Display Data
Use Case 1: Selection: Type “T” Transaction and Name “VA01”

<table>
<thead>
<tr>
<th>Req. Type</th>
<th>Request Name</th>
<th>Called Program Name</th>
<th>Obj. Ty.</th>
<th>Called Object Name</th>
<th>Proc. T.</th>
<th>Called Processing Block Name</th>
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</thead>
<tbody>
<tr>
<td>Transaction VA01</td>
<td>CL_ABAP_TABLEDESCR=CP</td>
<td>CL_ABAP_TABLEDESCR</td>
<td>CLAS</td>
<td>CL_ABAP_TABLEDESCR</td>
<td>METH</td>
<td>GET_XTYP_FROM_ITAB_DESC</td>
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<tr>
<td>Transaction VA01</td>
<td>CL_ABAP_TSTMP=CP</td>
<td>CL_ABAP_TSTMP</td>
<td>CLAS</td>
<td>CL_ABAP_TSTMP</td>
<td>METH</td>
<td>SYSTEMTSTMP_SYST2UTC</td>
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<tr>
<td>Transaction VA01</td>
<td>CL_ABAP_TSTMP=CP</td>
<td>CL_ABAP_TSTMP</td>
<td>CLAS</td>
<td>CL_ABAP_TSTMP</td>
<td>METH</td>
<td>ADD</td>
</tr>
<tr>
<td>Transaction VA01</td>
<td>CL_ABAP_TSTMP=CP</td>
<td>CL_ABAP_TSTMP</td>
<td>CLAS</td>
<td>CL_ABAP_TSTMP</td>
<td>METH</td>
<td>CLASS_CONSTRUCTOR</td>
</tr>
</tbody>
</table>
ABAP Call Monitor
Function 2: Display Call Graph

Shows additional calls of the calling transaction
1. Update Task (German: Verbucher)
2. Remote Function Calls (RFC) within the same system
3. Batch Jobs
ABAP Call Monitor - Function: Display Call Graph
Selection: Type “T” Transaction and Name “VA01”

<table>
<thead>
<tr>
<th>Req. Type</th>
<th>Req. Na</th>
<th>Called Request Ty</th>
<th>Called Request Name</th>
<th>N</th>
<th>S</th>
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<tbody>
<tr>
<td>Transaction VA01</td>
<td>Remote Function Call</td>
<td>DP_PUT_CLIENT_TABLE45A</td>
<td>10 1</td>
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<td>Transaction VA01</td>
<td>Remote Function Call</td>
<td>OLE_FLUSH_CALL</td>
<td>12 1</td>
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<td>Transaction VA01</td>
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<td>/SAPTRX/APPLOG_UPDATE_DB</td>
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<td>Transaction VA01</td>
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<td>CASH_FORECAST SD_ORDER_UPD_3</td>
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<tr>
<td>Transaction VA01</td>
<td>Update Task</td>
<td>CS_SALES_SEND_TO_SERVER</td>
<td>2 1</td>
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<td></td>
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<tr>
<td>Transaction VA01</td>
<td>Update Task</td>
<td>HANDLE_TEXT_ARRAY_AFTER_COMMIT</td>
<td>2 1</td>
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<tr>
<td>Transaction VA01</td>
<td>Update Task</td>
<td>MCEX_UPDATE_11_V1</td>
<td>2 1</td>
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<tr>
<td>Transaction VA01</td>
<td>Update Task</td>
<td>MCV_STATISTICS_UPD_V1_ORDER</td>
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<td>RV_MESSAGE_UPDATE</td>
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<td>Update Task</td>
<td>RV_SALES_DOCUMENT_ADD</td>
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<td>Update Task</td>
<td>SWE_EVENT_CREATE_IN_UPD_TASK</td>
<td>2 1</td>
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</tr>
</tbody>
</table>
BPCA - ABAP Call Monitor for semi-dynamic TBOM Generation
SAP Solution Manager 7.2 SP03 and SP05

Scope
The ABAP Call Monitor (transaction code SCMON) is a new SAP Basis monitoring tool which logs - during the running productive ABAP system - the execution of ABAP procedures plus the leading business process (transaction, report, URL, RFC). The result of this monitoring is a list of executed business processes plus the possibility to drill down and see all ABAP procedures which have been executed under the umbrella of this process.

Prerequisites on managed System in combination with SAP Solution Manager 7.2

<table>
<thead>
<tr>
<th>SAP Solution Manager</th>
<th>Managed System</th>
</tr>
</thead>
</table>
| SSM 7.2 SP03         | SAP_BASIS 750 or SAP_BASIS 740 SP14  
                       | SAP_KERNEL 742 Patch Level 310 or SAP_KERNEL 745+  
                       | ST-PI 2008_1 SP14 or ST-PI 740 SP04 |
| SSM 7.2 SP05         | SAP_KERNEL 7.22 Patch Level 123 or SAP_KERNEL 742 Patch Level 310 or  
                       | SAP_KERNEL 7.45+  
                       | ST-PI 2008_1 SP14 or ST-PI 740 SP04  
                       | SAP Basis 7.0 (used by SAP ERP 6.0 EHP 0). Kernel and ST-PI are sufficient  
                       | Details: SAP Note 2244217  
                       | https://launchpad.support.sap.com/#/notes/2244217 |
Check SAP Basis and Kernel level in managed system
Prerequisites for BPCA and SEA
Configuration activities to enable data transfer of usage data created by ABAP Call Monitor (SCMON)
SAP Solution Manager 7.2 Launchpad

- Tile: Configuration

Note:

- Activation of ABAP Call Monitor (SCMON) can be activated from SAP Solution Manager as described in the next steps
Configuration Activities in SAP Solution Manager 7.2 for SCMON

Scenario: Custom Code Management
Configuration Activities in SAP Solution Manager 7.2 for SCMON
Configuration Activities in SAP Solution Manager 7.2 for SCMON

SAP Solution Manager Configuration: Custom Code Management

1. Managing System Preparation
2. Housekeeping Settings
3. Create Template Users
4. Scope Selection
5. Client Selection

Select Client

<table>
<thead>
<tr>
<th>Extended System ID</th>
<th>System Type</th>
<th>Clients Configured for RFC</th>
</tr>
</thead>
<tbody>
<tr>
<td>XUQ</td>
<td>ABAP</td>
<td>800 - IDES-ALE Central FI Syst</td>
</tr>
</tbody>
</table>
Configuration Activities in SAP Solution Manager 7.2 for SCMON
First activate Analysis Job „ABAP Call Monitor: COLLECT“ for the managed system for SCMON
Configuration Activities in SAP Solution Manager 7.2 for SCMON

Second: Set SCMON Settings

<table>
<thead>
<tr>
<th>System ID</th>
<th>Custom Code Object</th>
<th>Custom Code Reference</th>
<th>Usage Monitoring (UPL/SCMON)</th>
<th>Custom Code Similarity</th>
<th>Code Check Results (ATC)</th>
<th>SQL Monitoring</th>
<th>CCLM Reporting</th>
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</thead>
<tbody>
<tr>
<td>XUQ</td>
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<td>1</td>
<td>1</td>
<td>1</td>
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</table>
### Configuration Activities in SAP Solution Manager 7.2 for SCMON

#### UPL-SCMON Settings

<table>
<thead>
<tr>
<th>Application</th>
<th>Extended System ID</th>
<th>Environment</th>
<th>Root</th>
<th>Status</th>
<th>Day</th>
<th>Week</th>
<th>Month</th>
<th>Year</th>
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</thead>
<tbody>
<tr>
<td>UPL</td>
<td>DSS</td>
<td>![Environment Not Determined]</td>
<td>☐</td>
<td>![UPL based on ST-PI]</td>
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<tr>
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<td>FQ7_3M</td>
<td>![Environment Not Determined]</td>
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<td>![UPL based on ST-PI]</td>
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<tr>
<td>UPL</td>
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<td>![Environment Not Determined]</td>
<td>☑</td>
<td>![UPL based on ST-PI]</td>
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<td>☑</td>
</tr>
</tbody>
</table>

- **Important:** Flag set = on for column ”Root” and “Month”
- **Note:** without Root, this will be used for UPL data
# Configuration Activities in SAP Solution Manager 7.2 for SCMON

## Collector Activation

<table>
<thead>
<tr>
<th>System ID</th>
<th>Objects</th>
<th>References</th>
<th>Similarity</th>
<th>Last Usage</th>
<th>Quality</th>
<th>Version</th>
<th>Criticality</th>
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<tbody>
<tr>
<td>XUQ</td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

![Collector Status UI](image-url)