SAP Solution Manager 7.1

SAP

Document History

> ⚠️ **Caution**
>
> Before you start the implementation, make sure you have the latest version of this document. You can find the latest version at the following location: service.sap.com/instguides ↗ .

The following table provides an overview of the most important document changes.

Table 1

Version	Date	Description
SAP Solution Manager 7.1 SP05; version 1.00	2012-06-11	Initial version
SAP Solution Manager 7.1 SP05; version 1.05	2012-06-20	Added SAP Note 740897 ↗ in Chapter Usage Types [page 23]
SAP Solution Manager 7.1 SP05; version 1.10	2012-10-22	Minor corrections
SAP Solution Manager 7.1 SP05; version 1.15	2012-11-26	Added SAP Note 1763697 ↗ in Chapter Useful SAP Notes [page 81]
SAP Solution Manager 7.1 SP05; version 1.20	2013-04-24	Minor corrections in Chapter Interoperability of Central SAP Solution Manager Systems [page 36], Section *SAP LoadRunner by HP*
SAP Solution Manager 7.1 SP10; version 1.50	2013-10-31	• ALM Process *Technical Operations* was renamed. The new name is Application Operations [page 71]. • Chapter Interoperability of Central SAP Solution Manager Systems [page 36] was updated. • Description for ALM Process Custom Code Management [page 77] was added.

Version	Date	Description
		• Description for ALM Process Change Control Management [page 63] was rewritten. • Minor corrections
SAP Solution Manager 7.1 SP11; version 1.60	2014-03-19	• Section *Scope Effort and Analyzer* in ALM Process Maintenance Management [page 76] was added. • Minor corrections
SAP Solution Manager 7.1 SP12; version 1.65	2014-07-31	Minor corrections
SAP Solution Manager 7.1 SP13; version 1.70	2015-03-16	• Minor corrections • Corrected links to SAP Support Portal (support.sap.com)
SAP Solution Manager 7.1 SP14; version 1.75	2015-10-02	• Added SAP Note 1750162 in section SAP Notes [page 14]. ⓘ Note The implementation of this note is a precondition for a correct indexing in SAP Solution Manager. • Minor corrections

Content

1   Introduction

Usage Rights for SAP Solution Manager Enterprise Edition

The extent to which you can use the software SAP Solution Manager 7.1 depends upon the type of maintenance contract you have.

If you have a contract for:

- SAP Enterprise Support
- SAP Product Support for Large Enterprises
- SAP Premium Support, or
- SAP MaxAttention,

you are authorized to use all functions in the software package, without any restrictions.

If you only have standard support contracts, you can install this software package, but you are only allowed to use restricted functionality, as indicated in the SAP Solution Manager Functional Baseline on SAP Support Portal at

▶ support.sap.com ➥ ▶ *Support Programs & Services* ▶ *SAP Solution Manager* ▶ *Usage Rights* ▶.

This master guide is a central starting point for the technical implementation of SAP Solution Manager 7.1 (hereafter SAP Solution Manager). SAP Solution Manager 7.1 comprises the SAP Solution Manager Enterprise Edition, which is activated automatically.

The SAP Solution Manager application management and administration solution supports heterogeneous system environments. Its functions cover all aspects of implementation, deployment, operation, and continuous improvement of solutions. As a centralized, robust application management and administration solution, SAP Solution Manager combines tools, content, and direct access to SAP, to increase the reliability of solutions and lower total cost of ownership. SAP Solution Manager is the pivotal hub for collaboration in the ecosystem, as it empowers communication between all the stakeholders of a solution, including project teams, SAP partners, consulting and SAP Active Global Support.

Structure of the Master Guide

The master guide consists of the following sections.

- Introduction
- Planning the Implementation or Upgrade of SAP Solution Manager

  Supports the activities to implement SAP Solution Manager, and leads you through the implementation.
- SAP Solution Manager Overview

  Describes the building blocks of SAP Solution Manager and explains the differences between older releases and SAP Solution Manager 7.1.
- System Landscape

  Contains information about how to install your system landscape.
- ALM Processes in Detail

  Introduces the processes and explains how to install them.
- Useful Links

  Provides access to more information.
- Questionnaire

Helps to collect the data needed for implementation.

- Reference

  Contains information about the overall documentation concept for SAP systems.

> ⚠ Caution
>
> Make sure that you have the latest version of the master guide, by checking SAP Service Marketplace before starting the installation. The master guide is regularly updated on SAP Service Marketplace at
> ▶ service.sap.com/instguides ↪ > *SAP Components* > *SAP Solution Manager* > *<current release>* ↩.

For a complete overview of the most recent media around SAP Solution Manager, see the *Product Availability Matrix* on SAP Support Portal at ▶ support.sap.com/pam ↪ ↩ and *SAP Software Download Center* on SAP Support Portal at ▶ support.sap.com/swdc ↪ ↩.

Constraints

The processes presented here are examples of how to use SAP software in your company. They are only models and will not necessarily run the way they are described here, in your system landscape. Check your requirements and systems, to determine whether these processes can be used productively at your site. Test them thoroughly in your test systems, to ensure that they are complete and free of errors, before going live.

2 Planning the Implementation of SAP Solution Manager

Application Lifecycle Management leads to a radical reduction in total cost of ownership (TCO) and risk for your IT organization. The key elements of Application Lifecycle Management are:

- standards for implementation and operations: ASAP and Run SAP
- SAP Solution Manager
- the concept of a **single source of truth**, implemented in SAP Solution Manager
- organizational aspects, such as Customer Center of Expertise (CoE) and critical Quality Management roles

With application management, you explore the value and scope of establishing a single source of truth for SAP solutions within your company.

You first define an ALM roadmap. In this step, you identify your pain points in implementing and operating SAP solutions, and map them to procedures and tools suggested by the SAP. This helps you to improve your IT maturity. A business case with ROI (return on investment) expectations should be developed, to be able to measure the economic results of your IT maturity improvement. This assessment may, for example, indicate that current change request management processing is already optimal in your organization, but that using incident management in SAP Solution Manager could provide increased value. Such a Run SAP assessment is provided by the SAP Consulting organization. The SAP Enterprise Support status report also has a section describing your level of Run SAP adoption. Certain aspects of the Run SAP roadmap are mandatory for collaboration with SAP. To improve your IT maturity according to your roadmap, migrate from the traditional Customer Competence Center (CCC) to the new Customer CoE model, and establish four quality managers driving improvement:

- safeguarding integration validation
- business continuity
- business process improvement
- protection of investment

A white paper on the new Customer CoE model, and detailed white papers on the charter of the four quality managers, are available on SAP Service Marketplace at support.sap.com/ccoe .

Apart from the organizational challenge, SAP Solution Manager needs to be implemented, which requires a technical foundation. You have to plan your SAP Solution Manager implementation, install or extend it, perform the basic configuration of SAP Solution Manager, and connect your systems to SAP Solution Manager. Once this foundation is established, you can benefit from End-to-End Root Cause Analysis for efficient troubleshooting across technology stacks, maintenance optimizer, SAP EarlyWatch Alert, and collaborate with SAP (such as sending incidents to SAP, service delivery and engagement, and remote supportability). The technical prerequisites for continuous quality checks and mission-critical support with service level agreements, are available after the basic configuration. SAP Technical Operations can be added to the foundation with a minimum of additional configuration.
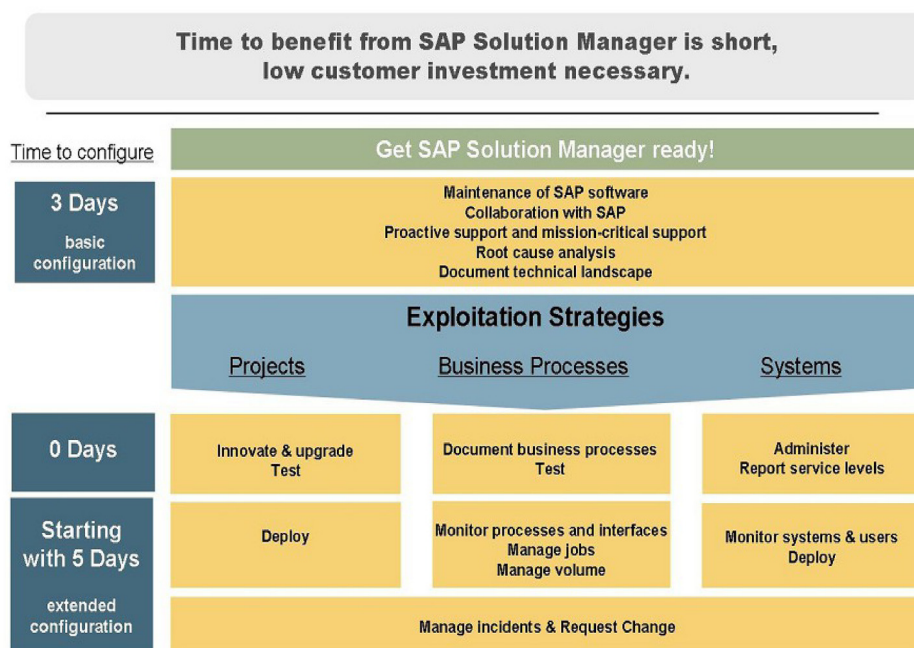
Figure 1: Roadmap for Efficient Application Lifecycle Management

Document your business processes in SAP Solution Manager, ideally as part of an implementation project. You can also use the solution documentation assistant. Once you have documented the business processes in SAP Solution Manager, you can perform test management in SAP Solution Manager, using the new Business Process Change Analyzer, which can recommend test, based on planned transports to production. Then you can define automatic business process operations, based on the business process documentation in SAP Solution Manager. Change management is based only on projects defined in SAP Solution Manager. You can benefit from clearly documented quality gates with standard check content for each quality gate. Change management can automate the deployment of updates, synchronized across transport tracks. Basic incident and problem management require only the basic configuration. Incidents can already be sent to SAP after the basic configuration has been performed. In-house incident management requires additional configuration, to put your service desk process and organization into SAP Solution Manager.

Last but not least, your organization must be empowered to work with SAP Solution Manager. SAP offers the E2E solution operations curriculum, to train IT staff in diagnostics, change management, business process operations and upgrade management.

2.1   Implementation Sequence

Implementation Aspects

This section describes the SAP Solution Manager 7.1 implementation process.

The SAP Solution Manager installation procedure is described in the installation guide on SAP Service Marketplace, at ▶ service.sap.com/instguides ↝ ▶ *SAP Components* ▶ *SAP Solution Manager* ▶ *<current release>* ◀.

The upgrade procedure to SAP Solution Manager 7.1 is described in chapter Planning the Upgrade to SAP Solution Manager [page 17].

After you have performed the steps described in these guides, follow the steps described in the *SAP Solution Manager 7.1 Configuration Guide*.

For more information about new releases, delta upgrades, and support packages, see the *SAP Software Download Center* on SAP Support Portal, at support.sap.com/swdc ⟳.

Business Process Blueprinting Tool

If you want to additionally implement the *Business Process Blueprinting Tool* see the corresponding guides, at ▌ service.sap.com/instguides ⟳ ❯ *SAP Components* ❯ *SAP Solution Manager* ❯ *<current release>* ❯ *6 Additional Guides - BPB* ▌.

Implementation Planning

Before starting the implementation, perform the following steps to plan the implementation.

Table 2

Step	Description	Details
1	Plan the implementation of the SAP Solution Manager landscape.	See *SAP Solution Manager Processes*, at ▌ support.sap.com/solutionmanager ⟳ ❯ *Processes* ▌, Planning Your System Landscape [page 27], Reference System Landscapes [page 43], the section *System Landscape Directory (SLD) Strategy* in Interoperability of Central SAP Solution Manager Systems [page 36], and the section *Installation and Configuration* in this chapter.
2	Plan hardware prerequisites for SAP Solution Manager 7.1.	See Sizing Your SAP Solution Manager [page 35].
3	Plan implementation of missing software components and SAP Host Agents and Diagnostics agent for managed systems.	See the *Agents Overview* section in Interoperability of Central SAP Solution Manager Systems [page 36].
4	Plan user & port availability.	See Users and Roles [page 47] and the security guide for SAP Solution Manager on SAP Service Marketplace, at ▌ service.sap.com/instguides ⟳ ❯ *SAP Components* ❯ *SAP Solution Manager* ❯ *<current release>* ▌.
5	Plan the basic configuration of SAP Solution Manager.	See the installation table in section *Installation and Configuration* in this chapter.
6	Plan restart of managed systems.	Necessary for Java system (CA Introscope Enterprise Manager bite-code agent activation).
7	Plan training of SAP Solution Manager administrators.	See SAP Community Network, at ▌ wiki.sdn.sap.com/wiki/display/TechOps/RCA_Home ⟳ ❯ *Learn how to use Root Cause Analysis* ❯ *Training & Certification* ▌.
8	Plan core and expert competency training for operators and end users	See SAP Enterprise Support Academy, at ▌ support.sap.com/esacademy ⟳ ▌ for Expert Guided Implementation sessions.

Step	Description	Details
	of SAP Solution Manager.	

For more information about the installation process, see the installation guide on SAP Service Marketplace at
▶ service.sap.com/instguides 🖱 ▶ *SAP Components* ▶ *SAP Solution Manager* ▶ *<current release>* ▮.

Installation and Configuration

The detailed steps to install SAP Solution Manager are described in the following table. For more information about how to perform these steps, see the documents in the details column. Some of the steps require access to the operating systems of the SAP Solution Manager system (managing system) and the connected managed systems. The time required for these steps can vary.

The customer organizational roles for this process include Application Management (AP), SAP Technical Operations (TEC), and the IT Infrastructure (IT) organizations. These roles correspond to those described in the SAP standards for solution operations, at support.sap.com/supportstandards 🖱.

Table 3

Step	Description	Time Required (h)	Details	Relevant Processes	Role
1	Check hardware prerequisites for SAP Solution Manager 7.1.	2	See Sizing Your SAP Solution Manager [page 35].	All	AP, TEC, IT
2	Install SAP Solution Manager, including support package update or upgrade to SAP Solution Manager 7.1.	60	See installation/upgrade guides on SAP Service Marketplace, at ▶ service.sap.com/instguides 🖱 ▶ *SAP Components* ▶ *SAP Solution Manager* ▶ *<current release>* ▮.	All	TEC ,IT
3	Apply latest Support Packages to SAP Solution Manager 7.1.	SP-specific	Apply support packages to a newly-installed SAP Solution Manager, as described in SAP Note 1577909 🖱.	All	AP, TEC, IT
4	Install SAP Library – Online Documentation SAP Solution Manager 7.1.	0,5 per instance host	See the *Installation Guide - SAP Library Installation and Update on Unix/Windows - For SAP systems based on SAP NetWeaver 7.0 EHP 2*, at ▶ service.sap.com/instguides 🖱 ▶ *SAP Library* ▮.	All	AP, TEC, IT
5	Connect all managed systems to SLD.	0.2 per system	See the SLD guides on the SAP Community Network, at www.sdn.sap.com/irj/sdn/nw-sld 🖱.	All	TEC, IT

Step	Description	Time Required (h)	Details	Relevant Processes	Role
			Update the content of SLD to the latest model and content version, see note 669669 🔁.		
6	Install Diagnostics agent and SAP Host Agent on all managed systems.	0.3 per system	See wiki.scn.sap.com/wiki/display/SMSETUP 🔁.	Root cause analysis	TEC, IT
7	Implement missing software requirement on managed systems.	1 per system	See Usage Types [page 32] on Plug-ins and SAP Note 1478974 🔁 (End-to-End Diagnostics).	Root cause analysis	AP, TEC, IT
8	Install Diagnostics agent on CA Introscope Enterprise Manager Host.	0.3	See section *CA Introscope Enterprise Manager Strategy* in Interoperability of Central SAP Solution Manager Systems [page 36].	Root Cause analysis	TEC, IT
9	Prepare System.	0,5	Automatic Preparation of SAP Solution Manager System (▶ *SOLMAN_SETUP* ❯ *System Preparation* ◀). See wiki.scn.sap.com/wiki/display/SMSETUP 🔁.	All	TEC, IT

After installing of the software components described above, the configuration can be performed centrally (depending on your requirements), from the managing system (with the exception of the agent installation and post configuration activity, which both require OS access). The following table explains the configuration steps, and where to find more information about each of them.

Table 4

Step	Description	Time required	Details	Access to Operating System Required	Relevant Processes	Role
1	Perform basic configuration of SAP Solution Manager.	4	See wiki.scn.sap.com/wiki/display/SMSETUP 🔁.	No	All	AP, TEC
2	Configure SAP Solution Manager processes.	scenario-specific	You may want to configure SAP Solution Manager processes, depending on your business processes.	No	All	AP, TEC, IT
3	Managed system setup.	0.3 per system	Use *Managed Systems Configuration* in `SOLMAN_SETUP`.	Yes	All	TEC

Step	Description	Time required	Details	Access to Operating System Required	Relevant Processes	Role
			See wiki.scn.sap.com/wiki/display/SMSETUP ↪.			
4	Restart SAP Solution Manager and managed systems.	0.5	Necessary for Java system (CA Introscope Enterprise Manager byte-code agent activation).	No	All	TEC
5	Check implementation.	1 per system	Use *Managed Systems Configuration* in `SOLMAN_SETUP`. See wiki.scn.sap.com/wiki/display/SMSETUP ↪.	No	All	AP, TEC

2.2 Before you start

This master guide provides an overview of the documents and information resources that you need, to install, upgrade, and configure SAP Solution Manager.

> **i Note**
>
> For more information about the documentation for each phase, see SAP Note 1088980 ↪ (Documentation: SAP Solution Manager).

This master guide gives an overview of SAP Solution Manager, its software units, and its processes, from a technical perspective. It is a planning tool to help you to design your system landscape. It refers to the required detailed documentation. For more information about the various documentation types, see the Reference section A at the end of this document.

> **i Note**
>
> The most current information about the technical implementation of SAP Solution Manager, and the latest installation and configuration guides, are on SAP Service Marketplace, at ▷ service.sap.com/instguides ↪ ▷ *SAP Components* ▷ *SAP Solution Manager* ▷.
>
> You should use the documents available here. The guides are regularly updated.

2.2.1 SAP Notes

Read the SAP Notes mentioned in this master guide, they are relevant to SAP Solution Manager implementation.

Implement SAP Note 1750162

Make sure to implement SAP Note 1750162 ✈ (*PHIOs are not found by Full Text Search Engine (TREX)*). The implementation of this note is a precondition for a correct indexing in SAP Solution Manager.

Planning information

To order SAP Solution Manager or its installation number, see SAP Note 628901 ✈ (Order SAP Solution Manager or its installation number).

Central Correction Note

The central correction note for SAP Solution Manager 7.1 Support Package 14 is necessary to guarantee the basic functions of your SAP Solution Manager. It is a composite SAP Note that is linked to additional SAP Notes. It is enhanced and updated regularly. See SAP Note 2110259 ✈ (SAP Solution Manager 7.1 SP14 – Basic functions).

List of SAP Notes

Relevant SAP Notes are listed at the end of this document (see Useful SAP Notes [page 81]). They contain the latest information about installation, and corrections to the installation documentation.

> **i   Note**
>
> Use the most recent version of each SAP Note. You can download SAP Notes from the SAP Support Portal, at support.sap.com/notes ✈.

2.2.2   More Information

For more information about planning topics not covered in this guide, see the following content on SAP Support Portal, SAP Community Network, or in SAP Help Portal.

Table 5

Content	Location in SAP Library, on SAP Service Marketplace, or SAP Community Network
Help on application usage for SAP Solution Manager, links to further documentation for Technology, SAP Business Suite	help.sap.com ✈
Latest versions of master, sizing, installation, upgrade, configuration, solution operations, and security guides	▷ service.sap.com/instguides ✈ ❯ *SAP Components* ❯ *SAP Solution Manager* ❯ *<current release>* ❯
Information about implementation and operation of SAP Solution Manager processes and functions	▷ service.sap.com/rkt-solman ✈ ❯
General information about SAP Solution Manager	support.sap.com/solutionmanager ✈
Released platforms and technology-related topics, such as maintenance strategies and language support	scn.sap.com/community/database ✈ To access the Product Availability Matrix directly, enter support.sap.com/pam ✈.
Network security	service.sap.com/securityguide ✈
High availability	www.sdn.sap.com/irj/sdn/ha ✈

Content	Location in SAP Library, on SAP Service Marketplace, or SAP Community Network
Performance	service.sap.com/performance
Information about support package stacks, latest software versions and patch level requirements	support.sap.com/sp-stacks
Information about Unicode technology	scn.sap.com/community/internationalization-and-unicode
SolMan Setup Wiki	wiki.scn.sap.com/wiki/display/SMSETUP

More Information

For further useful links, see Section Useful Links [page 80].

2.2.3 Accessing the SAP Library

For more information about SAP Solution Manager, access the SAP Library from one of the following locations:

- SAP Help Portal at ▌▶ help.sap.com ▶ *Application Lifecycle Management* ▶ *SAP Solution Manager* ▐
  Select the required language.

  ➡ Recommendation
  The SAP Help Portal contains the latest version of the SAP Library, so we recommend that you use this channel to access the SAP Library.

- An SAP system, if you have installed the online documentation: Choose ▌▶ *Help* ▶ *SAP Library* ▐.
  The browser starts.
- The help files on the online documentation CDs or DVDs
  If you want to view the help files in HTMLHelp format from the online documentation CDs or DVDs, you need a Microsoft Windows PC to install the HTMLHelp Viewer.

3 Planning the Upgrade to SAP Solution Manager

The upgrade to SAP Solution Manager 7.1 is a synchronized upgrade of ABAP and Java.

To set up a new managed system, refer to Chapter Planning the Implementation of SAP Solution Manager [page 9].

3.1 Upgrade to SAP Solution Manager 7.1

The upgrade to SAP Solution Manager 7.1 is synchronized with one tool, which connects the previously separate procedures for the ABAP and the Java parts of your SAP Solution Manager system. For details of the tool and to perform the synchronized upgrade, refer to the SAP Solution Manager 7.1 upgrade information on SAP Service Marketplace, at ▶ service.sap.com/instguides ➚ ▷ *SAP Components* ▷ *SAP Solution Manager* ▷ *Release 7.1* ▷ *5 Upgrade* ▷ .

More Information

For more information on planning topics, relevant SAP notes and how to access the SAP Library, refer to chapters SAP Notes [page 14], More Information [page 15] and Accessing the SAP Library [page 16] respectively.

4   SAP Solution Manager Overview

SAP standards for solution operations, Run SAP, and processes, introduce a new view of SAP Solution Manager:

- With SAP standards for solution operations, SAP has indexed standards for key operations processes within a company's business and IT units. These standards and practices address the needs of business process experts and IT departments, to ensure that the services provided by the SAP solutions are available for business users. Each standard contains best-practice procedures on how to run tasks, explanations of which tools in SAP Solution Manager should be used, training available, and services that support the adoption of the standard.

- Run SAP provides a methodology to enable you to optimize the implementation and management of end-to-end solution operations. The focus is on application management, business process operations, and administration of the SAP NetWeaver technology platform.

- The graphic below shows the SAP Solution Manager Enterprise Edition capabilities.
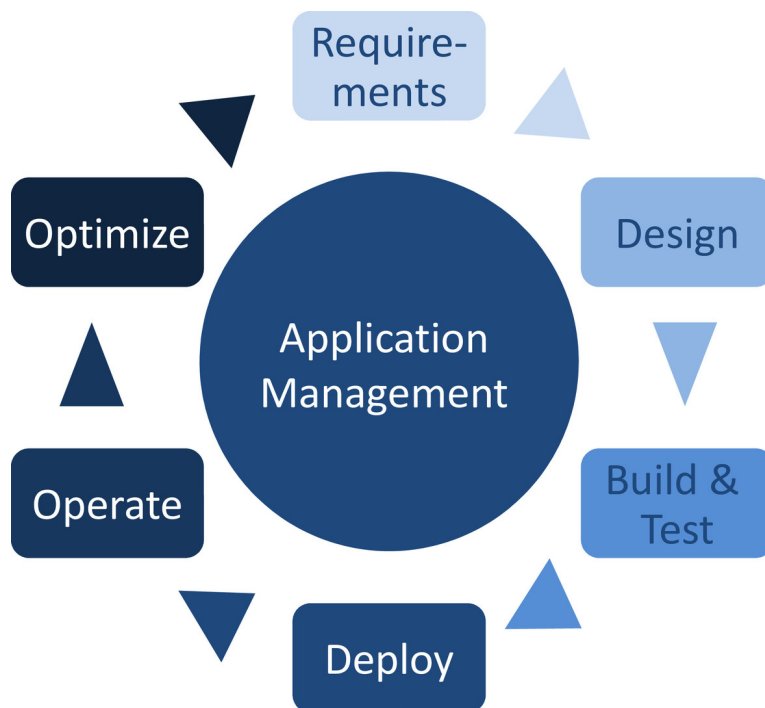
Figure 2: Application Management Life Cycle

- Identification and documentation of as-is critical business processes for SAP solutions, including partner components, custom code, and interfaces
- Identification of business needs, and preparation of realization via collaborative processes
- Alignment of new requirements with enhancements delivered by SAP and partners
- Browse service-oriented architecture (SOA) offerings, to build innovative applications for new business processes
- Specification of custom developments and documentation of code developed, definition of unit test requirements for custom code

- Configuration of project scope, adaptation of standard SAP process documentation to custom solution, definition of unit test requirements
- Definition of integration testing requirements and test scope, based on change impact analysis, development of automatic and manual test cases, management of testers, and comprehensive reporting of test progress and results
- Synchronize technical objects from the development to the production environment, across the technology stack
- Analysis of the potential impact of solution updates on key solution performance indicators, such as stability and performance
- Continuous control of mission-critical processes, interfaces, components, and jobs, based on business-driven key performance indicators (KPIs)
- Integrated solution-oriented incident management, from customer to SAP and partners, via the SAP Global Support Backbone, backed by service level agreements (SLAs)
- Technology-independent isolation of problems within a solution context, based on a unified SAP analysis framework
- Comprehensive management of SAP support services, from automatic alerting of service requirements, to delivery and follow-up, with a specific focus on continuous quality checks (CQCs) and support advice
- All capabilities for **end-to-end monitoring**, **alerting**, **analysis and administration of SAP solutions in heterogeneous system landscapes**. Life-cycle management of corrective software packages, from discovery and retrieval to test scope optimization and optional automatic deployment in the production environment
- Comprehensive project support for an SAP R/3 – SAP Business Suite transition

> **i Note**
>
> For more information, see SAP Service Marketplace at support.sap.com/solutionmanager .

4.1 Mapping Processes to Installable Software Units

The table below shows the mapping of processes to the SAP Solution Manager building blocks. SAP Solution Manager consists of the following types of software units (follow the links for detailed information).

- Systems with usage types [page 23]

  Systems with usage types are SAP Solution Manager systems that are configured for a specific purpose.
- Stand-alone engines [page 23]

  Stand-alone engines provide one specific (server) function in combination with SAP Solution Manager.
- Clients [page 24]

  Clients are used by (many) people on their local front-end PCs, to access functions offered by SAP Solution Manager or stand-alone engines in the system landscape.

Table 6

Processes	Usage Types	Stand-Alone Engines	Clients
Change Request Management	SAP Solution Manager ABAP stack	None	Support user front-end GUIs

Processes	Usage Types	Stand-Alone Engines	Clients
Change Control	SAP Solution Manager ABAP stack SAP Solution Manager Java stack SAP Solution Manager Business Intelligence	None	Support user front-end GUIs
Incident Management	SAP Solution Manager ABAP stack	None	Support user front-end GUIs Business user front-end GUIs
Implementation of SAP Solutions	SAP Solution Manager ABAP stack	Search and Classification (TREX)	Support user front-end GUIs
Upgrade of SAP Solutions	SAP Solution Manager ABAP stack	Search and Classification (TREX)	Support user front-end GUIs
SAP Engagement and Service Delivery	SAP Solution Manager ABAP stack SAP Solution Manager Java stack SAP Solution Manager Business Intelligence	CA Introscope Enterprise Manager SAP LoadRunner by HP	Support user front-end GUIs
Root Cause Analysis	SAP Solution Manager ABAP stack SAP Solution Manager Java stack SAP Solution Manager Business Intelligence	CA Introscope Enterprise Manager	Support user front-end GUIs
Technical Monitoring & Alerting	SAP Solution Manager ABAP stack SAP Solution Manager Java stack SAP Solution Manager Business Intelligence	CA Introscope Enterprise Manager	Support user front-end GUIs
Technical Administration	SAP Solution Manager ABAP stack	None	Support user front-end GUIs
Technical Reporting	SAP Solution Manager ABAP stack SAP Solution Manager Java stack SAP Solution Manager Business Intelligence	CA Introscope Enterprise Manager	Support user front-end GUIs
Test Management	SAP Solution Manager ABAP stack	None	Support user front-end GUIs

Processes	Usage Types	Stand-Alone Engines	Clients
	SAP Solution Manager Business Intelligence		

4.2 Overview of ALM processes

- SAP Engagement and Service Delivery

  SAP-delivered services and guided self-services and SAP EarlyWatch Alert are available in the *SAP Engagement and Service Delivery* work center. Service plan, issue management and expertise-on-demand functionality are provided, to enable the collaboration with SAP support. Service reports for on-site and remote services are stored, and can be listed per system and solution.

- Solution Documentation

  Efficient planning, reporting and operations require clear and reliable documentation of the existing customer solution. Solution documentation contains and connects business process and technical information about SAP and non-SAP solutions. It is centrally accessible and transparent, can be maintenance cost-efficiently, and supports internal collaboration with SAP.

- Solution Implementation

  SAP Solution Manager provides access to the tools, content, and methodology to implement and optimize SAP solutions, from both a functional and a technical perspective.

- Template Management

  With template management, you can manage your business processes efficiently, across geographical or organizational boundaries, using templates – from initial definition to implementation and optimization. It allows for company-wide business process standardization and harmonization, but leaves room for local changes.

- Test Management

  Changing SAP solutions through SAP-triggered updates or through customer-triggered changes, requires subsequent change impact analysis and integration testing. End-to-End Integration Testing enables you to analyze where SAP solution updates affect your critical business processes, and to perform the required end-to-end integration tests, using the SAP Solution Manager test capabilities. You can set up central procedures to analyze change impact, and organize and perform tests of cross-system and end-to-end business processes, using the SAP Solution Manager test management features.

- Change Control Management

  Change control management coordinates all changes, across the entire system landscape, to prevent conflicts between them and ensure that they do not disrupt the ongoing business. This improves the stability and availability of the system landscape, reduces risk, and lowers total cost of operations.

- Application Incident Management

  Service desk in SAP Solution Manager is the SAP tool to manage incidents efficiently, across the customer business unit, customer IT, SAP, and SAP partners. The service desk has an open bidirectional interface, to send and receive incidents to and from other ticket systems. This might be required if a part of customer IT has been outsourced or out-tasked, to service providers who use their own help desk.

- Application Operations

  Application operations in SAP Solution Manager comprises all capabilities needed for central monitoring, alerting, analysis, and administration of SAP Solutions, independently of the system type or the underlying

technology. Preconfigured templates allow a quick start with integrated reporting functionality. You can either use preconfigured standard reporting, or build your own customer-specific reporting.

- Business Process Operations

  SAP Business Process Operations comprises the most important application-related operations topics to ensure the smooth and reliable flow of the core business processes, to meet a company's business requirements.

  SAP Business Process Operations comprises the following processes:

  - Business Process & Interface Monitoring
  - Job Scheduling Management
  - Data Consistency Management
  - Business Process Performance Optimization

- Maintenance Management

  Maintenance Management provides tools for the maintenance of SAP solutions. The main element is the Maintenance Optimizer in SAP Solution Manager, which is the central point of access for all maintenance-related activities. It provides a powerful and easy-to-use assistant for the installation of support packages, support package stacks, and enhancement packages (EHPs). It supports upgrades, the installation of add-ons and Java patches, and the installation of legal change packages for SAP ERP HCM solutions. It manages all your maintenance activities for your entire solution, centrally, from within SAP Solution Manager. For end-to-end information on how to prepare and perform maintenance, see the *Maintenance Planning Guide for SAP Solution Manager* at wiki.scn.sap.com/wiki/display/SM/Maintenance+Optimizer . Further components are SAP Hot News, the side effect report, the note assistant, and the maintenance certificate.

- Upgrade Management

  SAP Solution Manager prepares, structures, and performs upgrades. It provides a portfolio of methodologies, tools, and services to ease upgrades of SAP components.

- Custom Code Management

  The innovative Custom Code Management concept from SAP provides comprehensive insight into how you can efficiently and effectively manage your home-grown custom code.

4.3 Installable Software Units

The following figure shows the types of installable software units for SAP Solution Manager that are described in the following sections. These units comprise the following:

- Systems that are configured for a specific purpose, indicated by one or more usage types
- Standalone engines that provide one specific (server) function in combination with SAP Solution Manager
- Clients used by (many) people on their local front-end PCs, to access functions offered by SAP Solution Manager or standalone engines, in the system landscape

Figure 3: Installable Software Units

4.3.1   Usage Types

How SAP Solution Manager is used

The following are the usage types and their dependencies for SAP Solution Manager.

- ABAP Stack in SAP Solution Manager

  Purpose: The ABAP stack in SAP Solution Manager provides the ABAP foundation of SAP Solution Manager.

  Dependencies: The ABAP stack in SAP Solution Manager is only delivered together with the Java stack in SAP Solution Manager.

- Java Stack in SAP Solution Manager

  Purpose: The Java stack in SAP Solution Manager provides the Java foundation of SAP Solution Manager.

  Dependencies: The Java stack in SAP Solution Manager is only delivered together with the ABAP stack in SAP Solution Manager.

- Business Warehouse (BW) in SAP Solution Manager

  Purpose: BI provides the infrastructure for data warehousing of the following SAP Solution Manager processes:

  - Root cause analysis
  - Test management
  - Technical monitoring & alerting
  - Technical Reporting
  - Solution monitoring
  - SAP Engagement and Service Delivery

  Dependencies: BI requires an ABAP application server (AS) in the same system. It can be combined with other usage types in one system.

> **i   Note**
>
> The BI included in SAP Solution Manager is used exclusively for data warehousing of SAP Solution Manager data. It cannot be used as a general BI for other SAP applications.
>
> For a standalone BI solution, the software is delivered via SAP NetWeaver. In case you are using an Oracle database, refer to SAP Note 740897 (Info about the Oracle license scope; Required Oracle options).

4.3.2   Standalone Engines

Standalone engines of SAP Solution Manager are installable software units. They are not SAP Solution Manager systems, they are standalone engines that provide specific (server) functions in combination with SAP Solution Manager.

Standalone engines do not have a usage type. They do not run on AS ABAP or AS Java.

The following standalone engines are available for SAP Solution Manager.

- CA Introscope Enterprise Manager
- SAP LoadRunner by HP
- Search and Classification (TREX)

For more information about the engines, see .

4.3.3 Clients

Clients are additional installable programs or tools. They either reside on local front-end PCs accessed by users, or on back-end systems where they are client programs within an SAP Solution Manager system landscape.

SAP Solution Manager has the following front-end clients and tools.

- Support user front-end GUIs
  - Adobe Flash runtime browser plug-in
  - BMC APPSIGHT CONSOLE 6.0.2
  - MS Internet Explorer
  - MS Office
  - NETWEAVER BUSINESS CLIENT 3.0
  - SAP GUI FOR WINDOWS 7.20
  - Yahoo widget engine
- CA Introscope Enterprise Manager WORKSTATION 8 Business user front-end GUIs
  - BMC APPSIGHT BLACKBOX 6.0.2
  - NETWEAVER BUSINESS CLIENT 3.0
  - SAP GUI FOR WINDOWS 7.20

4.4 SAP Solution Manager Extensions

- SAP Solution Manager adapter for SAP Quality Center by HP

  The SAP Solution Manager adapter for SAP Quality Center by HP supports role-specific testing, and covers the entire testing process, from requirement-gathering to test case definition and reporting. This infrastructure is easy for customers to implement and use, as it follows the typical SAP solution testing process.

- Process scheduling adapter for SAP Solution Manager

  The SAP Solution Manager integrates SAP Central Process Scheduling by Redwood via the Process Scheduling adapter for SAP Solution Manager. It is a new dimension in the integration of job scheduling tools and the central SAP application management platform. It ensures efficient control and maintenance of background activities, 24 hours a day, via process-oriented job management.

- SAP Productivity Pak by RWD adapter for SAP Solution Manager

  The SAP Productivity Pak by RWD adapter for SAP Solution Manager provides an interface to the SAP Productivity Pak by RWD documentation and simulation creation software. This integration accelerates the documentation of technical objects from the business blueprint and the configuration, via SAP Productivity Pak by RWD. The documents created are linked directly to the corresponding technical objects inside SAP Solution Manager.

More Information

For more information about the installation of the adapters, see the following SAP Notes:

- SAP Solution Manager adapter for SAP Quality Center by HP: 1285941 👈
- Process Scheduling adapter for SAP Solution Manager: 1122497 👈
- SAP Productivity Pak by RWD adapter for SAP Solution Manager: 1274747 👈

4.5 Work Center Concept

SAP has started the *Run SAP* initiative to implement End-to-End Solution Operations to run business applications through their complete life cycle. Based on a set of SAP standards, a roadmap, and a training and certification package, Run SAP helps customers to achieve end-to-end solution operations.

You can download the SAP standards for Solution Operations, from SAP Support Portal, at support.sap.com/supportstandards 👈. They describe typical roles in a customer's IT environment. For optimal role support, SAP has grouped existing and new functions in SAP Solution Manager work centers. Operations aspects are fully covered by including administrative functions for SAP NetWeaver. Work centers are ABAP Web Dynpro-based applications. They offer the following advantages:

- Easy to use, similar look and feel
- Context transfer when jumping from one work center into another
- Logical grouping of tools for an area
- Simple authorization concept
- Easy to expand

Each IT role belongs to one or more work centers. For instance, the *Technical Administrator* IT role is covered in the *System Monitoring*, *System Administration*, and *System Landscape Management* work centers.

The following work centers are available:

- Business Process Operations
- Change Management
- Root Cause Analysis
- Implementation/Upgrade
- Incident Management
- Test Management
- Job Management
- Solution Documentation Assistant
- SAP Engagement and Service Delivery
- SAP Solution Manager Administration
- Technical Monitoring
- Technical Administration
- SAP Solution Manager Configuration
- SAP Solution Manager Administration
- System Administration

- System Monitoring

My Home is the central point of access to all important data of almost all work centers in SAP Solution Manager.

5 System Landscape

This chapter contains information about how to install your system landscape.

5.1 Planning Your System Landscape

SAP Solution Manager Technical Overview

Before considering SAP recommendations for the SAP Solution Manager system landscape, it is necessary to provide a technical overview of the SAP Solution Manager platform itself. The SAP Solution Manager is an integrated lifecycle management solution, based on a dual-stack SAP NetWeaver 7.02 system. It should be Unicode. Additionally-installed components include those for root cause analysis, such as CA Introscope Enterprise Manager, BMC license server, the browser plug-in, agents for managed systems, and the SAP Router and FTP server.

These together form the SAP Solution Manager platform, in which they are integrated into the holistic solution life cycle management process.

Implementation

Construction of the SAP Solution Manager system is based on the standard SAPinst method. The system has to be dedicated to the SAP Solution Manager. No other components, other than add-ons, can be installed on top of SAP Solution Manager. SAP Solution Manager is updated through support and SAP enhancement packages.

SAP Solution Manager does not necessarily require separate hardware. It can be installed as a separate instance on existing hardware.

After installation, further configuration is required. The basic configuration settings are performed with a guided procedure in the transaction `SOLMAN_SETUP`.

There are some additional setup steps to be performed on managed systems, to connect them to SAP Solution Manager. These steps can also be executed with a guided procedure in transaction `SOLMAN_SETUP`. If you want to use the diagnostics capabilities for your managed systems, see SAP Note 1472465 (Diagnostics – Setup of Managed Systems).

5.1.1 Landscape Recommendation

SAP customers often ask what kind of landscape they will need for SAP Solution Manager? One system? Two systems? Three? What are the pros and cons of each landscape scenario? This section addresses these questions.

The following diagram shows the three options.
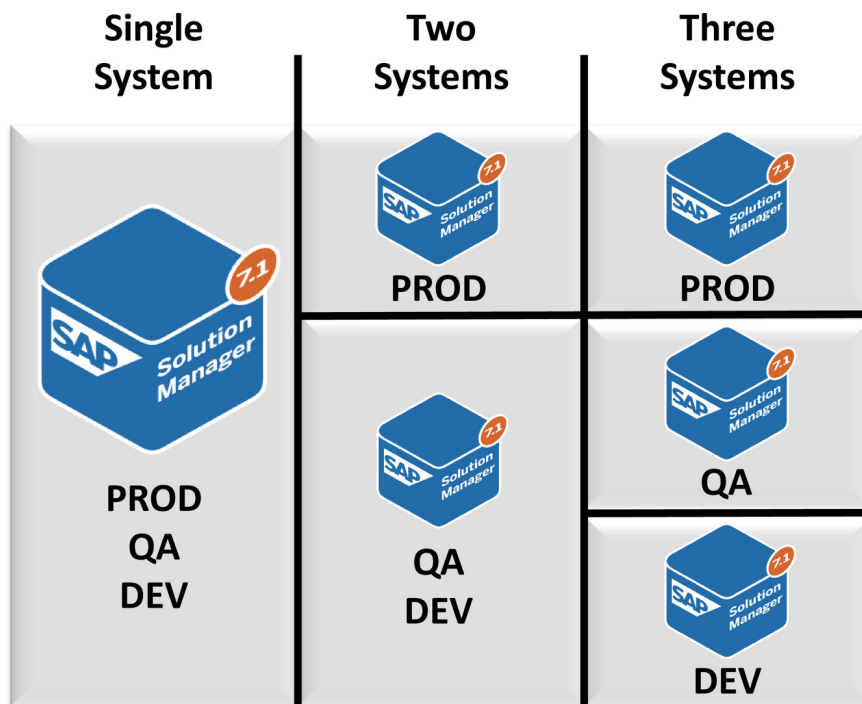
Figure 4: Three Options for the Landscape

In a single-system landscape, all roles are hosted on the same system. For a two-system landscape, development (DEV) and quality assurance/test (QA) functions are on one system, and production (PRD) on another. In a three-system landscape, each role has its own system.

Single-System Landscape
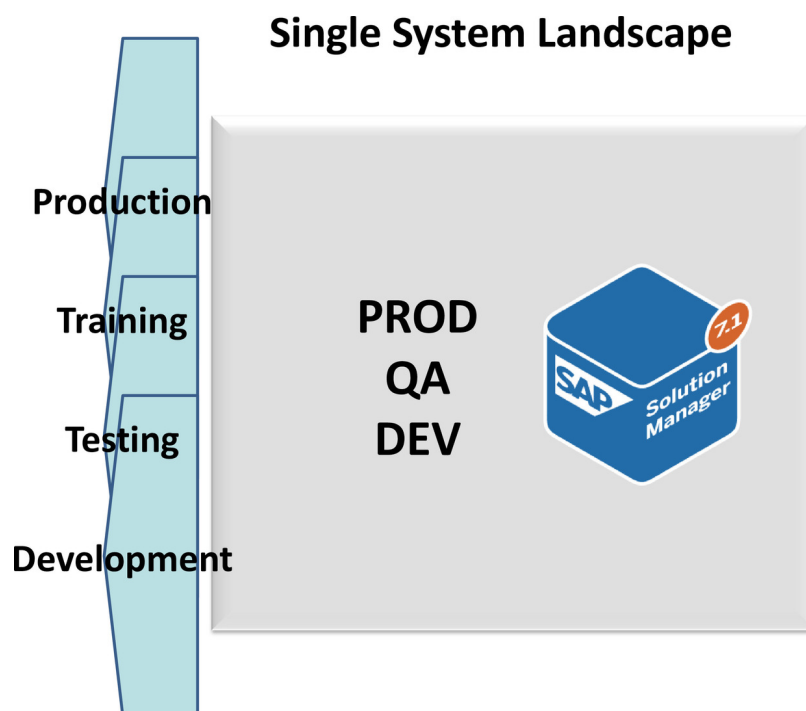
Figure 5: Single-System Landscape

In this option, development, testing and production operations all run in parallel in one system.

The advantage of this configuration is mainly in the reduction of hardware and support costs, and that existing hardware can be used.

However, it has some serious problems and risks. With all activities occurring in one system, all customizing and development work is done in the production system. In addition, new support packages and SAP Notes are applied directly in production. Testing and training also take place in the production system. SAP Solution Manager does not support the client concept (as many functions are cross-client), so test and training data are mixed with production data. There is a high risk of conflicts with this approach.

Two-System Landscape
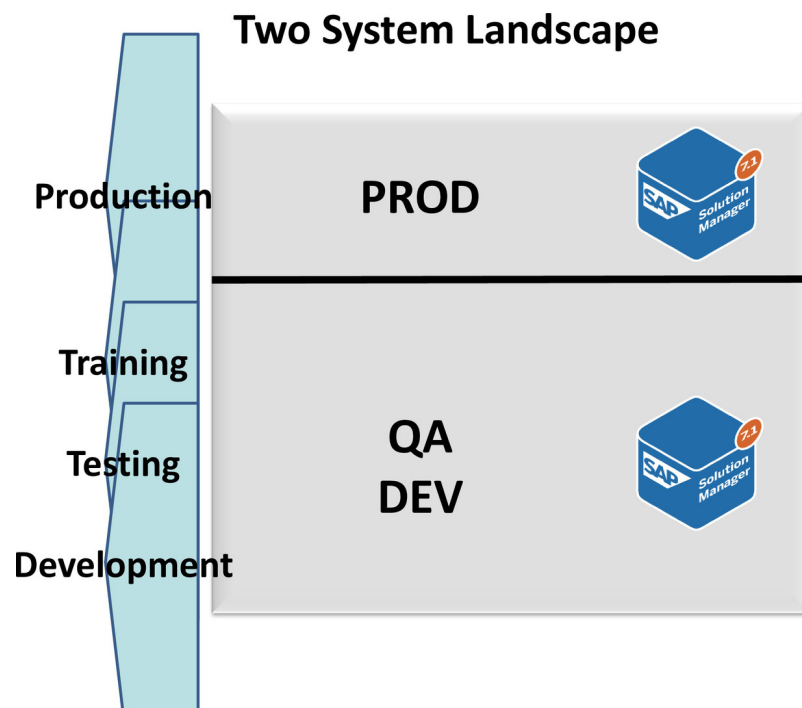
Figure 6: Two-System Landscape

With the two-system landscape approach, we overcome some of the risks inherent in the single-system option, by segregating production from the test and development environments. Testing and training are now separated from production, resulting in the separation of test and training data from production data. New requirements, optimization tasks, and support packages and SAP Notes, are also created in the development environment first. This approach leads to a more stable system, and provides a higher-quality support infrastructure for the customer.

The drawbacks to this option are that testing and training activities take place in the development system. Since SAP Solution Manager does not support the client concept, it is not possible to completely separate development activities and data from testing and training activities.

> **Example**
>
> A sample scenario in which a two-system landscape would be sufficient:
>
> - No significant development, testing and training activities occur at the same time in the combined DEV/QA system
> - Only few modifications to SAP standard

Three-System Landscape

Three System Landscape

Production   PROD

Training

Tes

QA

Develo...nt   DEV
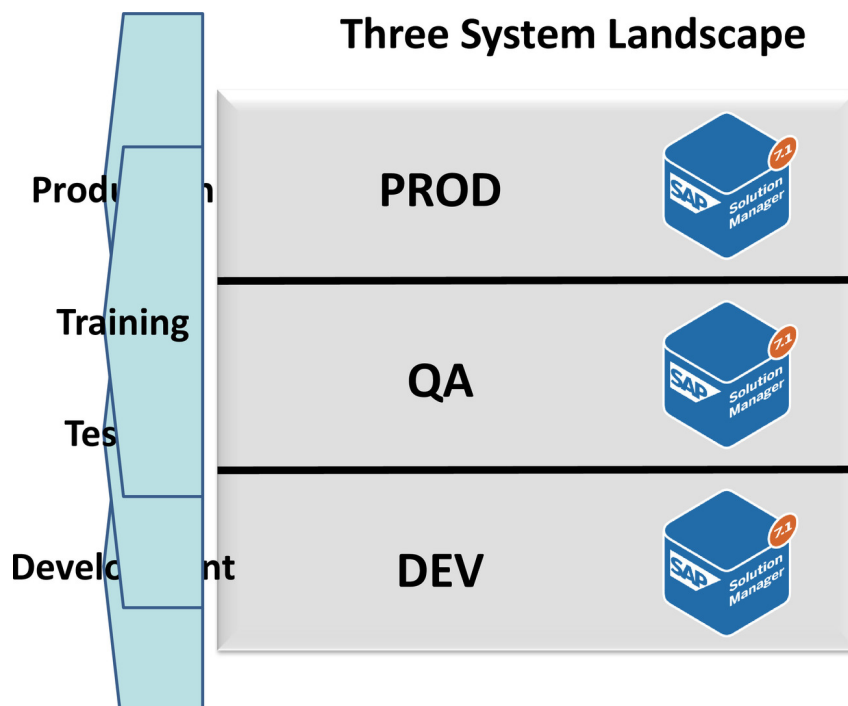
Figure 7: Three-System Landscape

In this option all development, training, test, and productive activities, and their data are fully separated, in dedicated systems.

This option presents the least risk, as all activities can be performed in parallel, in their respective systems. New development is separated from the test and production environments. Production system downtime is minimized, so the SAP Solution Manager system has higher availability and stability. We recommend this option for **all** SAP systems, if the business processes are used daily. SAP Solution Manager is normally used for projects, monitoring, testing, change management, and other key life cycle management activities, and so meets this criterion. Also, if the customer uses processes such as change request management, or makes a lot of customizing changes to SAP Solution Manager, a separate test system is essential, to validate these changes. For more information, see SAP Note 952859 (System infrastructure recommendation: Change Request Management).

The downside of this option is higher infrastructure and administration costs.

ℹ **Note**

With the two and three-system options, the production systems change setting should be *no changes permitted*.

Additional Landscape Information

This section gives you an overview of the steps required to determine your technical system landscape for SAP Solution Manager.

1. Determine the SAP Solution Manager processes that you want to implement.

2. Determine which installable software units (systems with usage types, standalone engines, and clients) are required for these processes.

3. Determine your system landscape; that is, decide how many systems you require and how you want to use each of these systems. The recommendation is a three-system landscape for mission-critical processes.

4. Together with your hardware partner and technical consultant, map the required systems and standalone engines of SAP Solution Manager, to hosts.

5. Implement your SAP Solution Manager system landscape.

For more information, see the recommendations on the SAP Community Network, ▶ sdn.sap.com/irj/sdn/
landscapedesign ↪ ◗.

Recommendation

To be able to use all cross functionality, such as Change Analysis, Quality Gate Management and Change Request Management, connect all managed systems to the productive Solution Manager at least. A few managed systems should also be connected to the quality Solution Manager or development Solution Manager, for testing purposes.

5.1.2 How Many SAP Solution Manager Systems are Needed?

For tight functional integration, we recommend running all processes on the same SAP Solution Manager system. The SAP Solution Manager functionality (such as change request management, root cause analysis) should be executed on one system. This is because it is best to have all solution information (systems, business processes) and messages (incidents, issues, change requests) accessible to the entire support organization, for the most efficient management of the production solutions.

In some customer situations, multiple productive SAP Solution Manager systems have been used, with complete segregation of business units. This approach may restrict the collaboration between these business units. Some customers have implemented separate solutions for their business units, which allows for more open sharing of process and message information between business units, while still providing security through authorizations.

Customers often ask if they can run SAP Solution Manager as a separate instance on the same hardware as other SAP systems. This is possible.

5.1.3 Operating System Recommendation

We recommend that SAP Solution Manager run on a 64-bit system. If your SAP Solution Manager system still runs on a 32-bit system, upgrade to a 64-bit system if you are planning to migrate to Unicode.

5.1.4 Unicode

We recommend running SAP Solution Manager on Unicode (for more information, see SAP Service Marketplace, at ▶ service.sap.com/unicode ↪ ▶ *Unicode FAQs* ◗). All new SAP Solution Manager installations must be Unicode. For customers who have upgraded from previous releases of SAP Solution Manager and are not yet on

Unicode, we recommend migrating the Web Application Server ABAP to Unicode, although there are currently no technical limitations to the processes if the system is not Unicode.

5.1.5   Usage Types

Since SAP Solution Manager is an integrated installation, it is not possible to update usage types independently. All usage types in the system are updated by SAP enhancement packages; it is not possible to update only parts of your SAP Solution Manager system. Some usage types may require additional licensing.

5.1.6   High Availability

The more functions you use in SAP Solution Manager, the more you need to rank it as mission-critical. Depending on your business needs, you should set up SAP Solution Manager itself as a high-availability system. For more information, see SAP Community Network, at www.sdn.sap.com/irj/sdn/ha.

5.1.7   SAP Solution Manager Client Strategy

SAP delivers a client with a standard configuration for SAP Solution Manager, as part of the installation process. Client 000 is the initial configuration client, and client 001 is provided for productive use. Additional clients can be created if desired.

Front-End Client Strategy

When accessing SAP Solution Manager, there are several client options.

SAP GUI

SAP GUI is SAP's universal client for accessing SAP functionality in SAP applications such as SAP ERP, SAP Business Suite (SAP CRM, SAP SCM and SAP PLM), and SAP Business Warehouse. SAP GUI functions like a browser. It gets information from the SAP server, such as what, where, when and how to display contents in its window. The members of the SAP GUI family have attributes to make them suited to different user environments. SAP GUI comes in the following three different flavors.

- SAP GUI for Windows

  SAP GUI for Windows is an implementation designed for the Windows operating system, providing a Windows-like user experience, and integration with other applications based on Object Linking and Embedding (OLE) interfaces or ActiveX controls.

- SAP GUI for the Java Environment

  SAP GUI for the Java environment is a unified SAP front-end for multiple platforms. It is based on a platform-independent architecture and Java implementation. As a major benefit, it provides access to SAP applications that are based on control-enabling technology and was therefore previously reserved for Windows users. SAP GUI for Java is also available on Windows.

- SAP GUI for HTML

32

SAP Solution Manager 7.1
System Landscape

SAP GUI for HTML automatically maps the screen elements in SAP transactions to HTML, using HTML business functions in the SAP Internet Transaction Server. A web browser is sufficient to access almost all transactions.

For more information, see SAP Community Network, at scn.sap.com/community/gui 🔗.

SAP NetWeaver Business Client

The SAP NetWeaver Business Client (NWBC) is a rich desktop client. The SAP NetWeaver Business Client offers a unified environment for, and a single point of entry to, Web Dynpro applications and other SAP business applications and technologies.

Suited to run business application content through its multiple rendering engines, the SAP NetWeaver Business Client provides a solution for hosting classical dynpro/SAP GUI user interfaces (UIs), Business Server Pages (BSPs), portal pages, and other content. In addition to the basic capabilities detailed above, the SAP NetWeaver Business Client leverages its desktop footprint benefits, to provide highly integrated and attractive business applications, with high fidelity of user experience and operational quality.

Content Types for the NWBC

In addition to its multiple rendering engines, its unique protocols and its desktop capabilities described above, the NWBC incorporates generic desktop integration functions such as drag & drop, and dialog boxes, through the use of application programming interfaces (APIs). The result is an efficient, modern and appealing client environment, optimally embedding into the new rich client.

As mentioned previously, the NWBC offers different rendering engines to host different content types. These content types include:

- HTML web content
- Dynpro, BSP, SAP GUI content
- Web Dynpro content

For more information, see SAP Community Network, at scn.sap.com/community/netweaver-business-client 🔗.

Browser

As of SAP Solution Manager 7.0 support package 15, role-based work centers provide standardized and logical access to the SAP Solution Manager processes. These work centers can be accessed from a web browser, such as Microsoft Internet Explorer. However, as not all functions of SAP Solution Manager can be accessed via browser, an SAP GUI shortcut automatically launches in the browser window, if a function requires the SAP GUI.

5.1.8 Archiving Strategy

SAP Solution Manager has limited archiving functionality. The following objects that can be archived:

- Projects
- Solution landscapes
- CRM transactions (service tickets, change requests, change documents, issues)
- Monitoring data in the Central Performance History database
- Test packages and test cases

The amount of the data for the above objects is relatively modest. Where a lot of data can accumulate is in the project documentation, which can grow by several hundred megabytes a week, particularly if document versioning is used.

Service sessions such as SAP EarlyWatch Alert Reports and Service Level Reports can also be archived, if necessary. SAP Note 546685 📌 (Archiving in Solution Manager (operation)) describes the archiving process in SAP Solution Manager for operations activities.

> **i Note**
>
> If you archive SAP CRM transactions, such as service desk messages or change requests, these messages may be linked to test cases, projects, solutions, and other objects and archiving them may break this relationship.

Even though SAP Solution Manager does not include a comprehensive archiving function for most processes, you can still minimize database growth. Before any data is deleted, however, you must consider whether there is any other way to preserve it, for example putting the objects in a transport, or moving them to a separate file server.

Monitoring Reports

SAP EarlyWatch Alerts and Service Level Reports can be stored on a separate file server, and the session data can then be deleted with the report `RDSMOPREDUCEDATA`.

Documents

The report `SOLMAN_UNUSED_DOCUMENTS` searches for all documents created by a specified user, and checks whether they are in use. The report generates a list of unused documents, which you can select and delete as required.

Solutions

Solutions can be copied to a transport file with the transaction `SOLUTION_MIGRATION`. They can then be deleted from SAP Solution Manager within a work center, or by the report `RDSMOPDELETESOLUTIONS`.

Projects

Projects can be copied to a transport file with the transaction `SOLAR_PROJECT_ADMIN` (accessible from the *Implementation/Upgrade* work center). This procedure only saves the business process structure and linked documents. It does not save reference objects such as messages, issues, or test cases. The transaction `SOLAR_PROJECT_ADMIN` is also used to delete projects.

Template projects are stored in their own transport requests. This allows you to delete old versions.

Test Objects

Test plans and test packages are repository objects, and can be transported. Transaction `STWB_2` can create the transports and remove them from SAP Solution Manager. Test results can be consolidated in a test report, and extracted into Microsoft Word documents.

eCATT objects (system data containers, test data containers, test scripts, test configurations) are also repository objects and can be transported. They can also be converted into an XML file. Transaction `SECATT` and `STWBM` can delete the data. eCATT logs can also be archived. For more information, see the online documentation at
▶ help.sap.com 📌 ▶ *Technology* ▟.

Business Partners

Invalid business partners can be deleted with transaction `BUPA_DEL` if they are not already assigned to a service transaction.

BW Data

Data loaded from SAP Solution Manager into the BW system (SAP EarlyWatch Alert Reports, SAP EarlyWatch raw data, Technical Monitoring data, LMDB data, root cause analysis data, business process monitoring data) can be deleted by the standard process in the BW system. For data such as the RCA, automatic housekeeping handles the metrics collected hourly, and aggregates and deletes data after 30 days, and data collected in minute intervals after 24 hours. For System, Test Workbench and Incident Management reporting, this default can be changed.

CA Introscope Enterprise Manager Data

If the root cause analysis in SAP Solution Manager is used, it must be backed up separately. Since CA Introscope Enterprise Manager does not have its own backup method, the folder /usr/sap/ccms/apmintroscope on SAP Solution Manager must be backed up regularly.

In addition, the following folders should be backed up regularly:

- ../data contains the data collected by the agents
- ../traces contains the trace data

More Information

For more information about archiving, see Useful SAP Notes [page 81].

5.1.9   Sizing Your SAP Solution Manager

One of the key issues that you must address for your SAP Solution Manager, at an early stage and throughout the product life cycle, is the system resources required. The sizing of your hardware is a precondition for good performance. Sizing means that you determine the hardware requirements for your SAP Solution Manager system. This depends on which processes you want to use and the data load for the system. Your SAP Solution Manager needs to be able to handle peak loads, and to behave predictably, as this is your key solution life cycle management platform. For sizing and performance, the database and application layers (services, for example dialog, update, batch) are the most important for CPU, main memory and disk space. This depends largely on the processes you use and the number of users.

More Information

For more information about sizing, see the SAP Solution Manager Sizing Toolkit, at ▶ service.sap.com/instguides ↪ ▶ *SAP Components* ▶ *SAP Solution Manager* ▶ *<current release>* ▶ *1 Planning* ▶ *SAP Solution Manager Sizing Toolkit* ◢.

5.2 Interoperability of Central SAP Solution Manager Systems

SAP Solution Manager interacts with many other SAP systems and components while providing life cycle management functionality. For example, data from managed systems, such as performance metrics and incidents, is sent to SAP Solution Manager via RFC. This information can be forwarded to SAP Global Support Backbone for analysis or incident resolution. Incidents are handled in the SAP CRM component; monitoring, business intelligence, and root cause analysis use SAP NetWeaver functions. This interoperability allows SAP Solution Manager to leverage existing SAP functions for day-to-day life-cycle management tasks. This section describes some of the key interactions.

Root Cause Analysis

The root cause analysis scenario is an integral part of SAP Solution Manager. It analyzes the root cause of incidents in your landscape, efficiently and safely. Root cause analysis must be set up and made accessible remotely, before Go live.

SAP NetWeaver Administrator (NWA)

SAP NetWeaver Administrator (NWA) performs system administration for Java-based systems. It can be accessed from the *Technical Administration* work centers in SAP Solution Manager. NWA is part of the AS Java component and does not need to be installed separately. It administers an SAP NetWeaver Application Server Java, and can contain usage type-specific enhancements. For SAP NetWeaver Composition Environment (SAP NetWeaver CE), it contains functionality to administer service-oriented applications, and manage service-oriented architectures in SAP NetWeaver Process Integration 7.10. NWA will be continuously enhanced, and replaces the SAP Visual Administrator.

> ℹ **Note**
>
> Functions of the system-wide SAP NetWeaver Administrator are being integrated into SAP Solution Manager, as the central platform to administer system landscapes, and can be accessed from the relevant work centers.

MDM Administration Cockpit

With MDM 7.1, MDM servers and repositories can be administered centrally using SAP Solution Manager. The MDM Administration Cockpit is in the *System Administration* work center in SAP Solution Manager.

The MDM Administration Cockpit performs the following basic MDM system landscape maintenance administration tasks:

- Server maintenance
  - Display status of MDM servers
  - Start MDM server
  - Stop MDM server
- MDM repository maintenance
  - Display status of MDM repositories
  - Archive repository
  - Load/Unload MDM repository
  - Verify repository
  - Repair repository

The MDM Administration Cockpit is an ABAP Web Dynpro application that gives an overview of the selected MDM system. The cockpit gets the MDM system definition from the SAP Solution Manager Landscape Management Database, and displays the current status of its components.

The status of the servers, and their activities, are controlled via SAP Startup Framework web services (the new MDM 7.1 installation environment).

The status of the repositories is retrieved, and activities performed on them via the MDM ABAP API that is connected directly to the MDM server by a trusted connection.

To use the MDM Administration Cockpit, you need the following components.

- MDM 7.1 on the host

- Solution Manager 700 SP18 or later

  The MDM Administration Cockpit is delivered with the SAP Solution Manager component.

- MDM ABAP API add-on: `MDM_TECH 710_700`

  The ABAP API add-on must be installed on the SAP Solution Manager system.

For more information about MDM ABAP API deployment, see the MDM ABAP API guide on SAP Service Marketplace in the SAP MDM Documentation Center, at ▶ service.sap.com/installMDM .

For more information about MDM Administration Cockpit setup, configuration, and usage, see the SAP Help Portal at ▶ help.sap.com ▶ *Technology* ▶ *SAP NetWeaver MDM* .

Landscape Data Management: System Landscape Directory and Landscape Management Database

Many functions in SAP Solution Manager, like monitoring and alerting, diagnostics, and system maintenance, need up-to-date landscape data. Since landscape data is mostly gathered outside the SAP Solution Manager system, the landscape needs to be taken into account. The main landscape management tools are **the System Landscape Directory (SLD)**, and the **Landscape Management Database (LMDB)**. This is how to set up landscape data management (see next figure):

- **SLD**

  The technical system data is collected by self-registration of technical systems in the *System Landscape Directory* (SLD).

  The SLD contains information on installable software (updated via the SAP Service Marketplace) and technical system data, mostly sent by these systems using data suppliers. Additionally, data such as Business Systems for SAP NetWeaver Process Integration is created manually in the SLD. This landscape information in the SLD is essential to SAP Solution Manager, so the use of the SLD is mandatory.

  For more information, see the *Planning Guide - System Landscape Directory*; see link in Useful Links [page 80].

- **LMDB**

  The data from the SLD is replicated into the SAP Solution Manager Landscape Management Database (LMDB) introduced with SAP Solution Manager 7.1. The LMDB is a central, built-in repository for all Solution Manager applications that access landscape data. The LMDB shares the CIM model with the SLD, plus the full automatic content synchronization mechanism, so that all SLD data provided by the productive SLD is replicated into LMDB, without user interaction. Data can be enriched manually in the LMDB. Applications which use this data include SAP Solution Manager Diagnostics and PI Monitoring.

  For more information about the LMDB, see *Documentation for System Landscape Management - LMDB*;see link in Useful Links [page 80].

LMDB retrieves data from a "source" SLD via full automatic content synchronization. The minimum SLD version required is:

Table 7

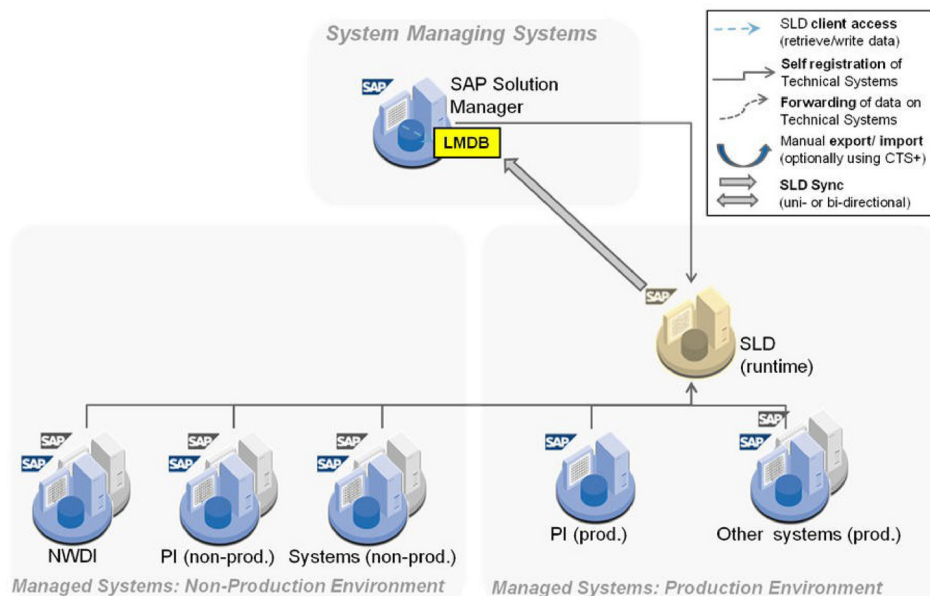| SAP NetWeaver Release of SLD System	Supported Support Package Stack Level
SAP NetWeaver 6.40	not supported
SAP NetWeaver 7.0	not supported
EHP1 for SAP NetWeaver 7.0	not supported
EHP2 for SAP NetWeaver 7.0	SP6, patch 5
SAP NetWeaver 7.1	SP9
EHP1 for SAP NetWeaver 7.1	all SPs
SAP NetWeaver 7.2	all SPs
SAP NetWeaver 7.3	all SPs
EHP1 SAP NetWeaver 7.3	all SPs

Figure 8: Landscapes with SAP NetWeaver PI or WebDynpro Java applications, showing the connections between landscape data repositories

If productive SLDs are in use, their landscape information can be forwarded to a central SLD, and then to SAP Solution Manager. This forwarding has to be configured manually for each productive system.

A central SLD also allows Maintenance Optimizer to use the Software Lifecycle Manager (SLM) features. This allows patches and stacks to be downloaded to a central location provided by the SLM.

> **i Note**
>
> For landscapes with **no** productive Java stack outside Solution Manager (as would be the case for PI and Web Dynpro Java), implementing the SLD in SAP Solution Manager's own Java stack would be an alternative to connecting all SLD data suppliers.
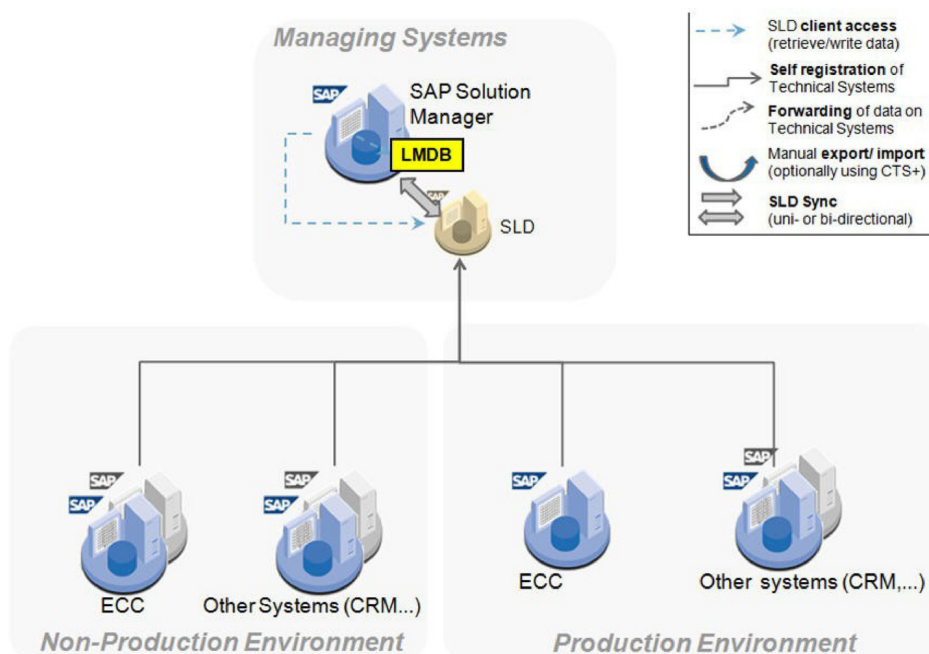
Figure 9: Landscapes without SAP NetWeaver PI or WebDynpro Java applications: An SLD is running locally on the SAP Solution Manager system.

SAP's SLD Recommendation

Do not manually create system landscape data in SAP Solution Manager without an SLD. Best practice is a central SLD in which all systems register themselves, directly or indirectly, via data supplier. This SLD can forward technical system data to other SLDs. For further details, see the *Planning Guide - System Landscape Directory*; see link in Useful Links [page 80]

Connect the central SLD which gathers the technical system data as the source of the Landscape Management Database (LMDB), to SAP Solution Manager. All SLD data is synchronized to LMDB automatically.

Software Lifecycle Manager (SLM)

The Software Lifecycle Manager simplifies software logistics tasks (such as the installation of support packages) in your system landscape, by providing services to SAP Solution Manager, which helps to manage the life-cycle of your SAP solutions and products. The SLM can now be used in maintenance optimizer. It stores files centrally, and contains deployment options.

Business Warehouse (BW) Strategy

BW provides important reporting functions, such as system and service level reporting, and change analytics, to the various SAP Solution Manager processes. There are three main ways of using BW in your system landscape.

BW in the Productive SAP Solution Manager Client

In this scenario, BW is used in the same productive client as SAP Solution Manager. This makes configuration simpler, and isolates the BW activities for solution life cycle management from the data on a production BW instance. This is the SAP recommendation.

BW in a Separate Client on SAP Solution Manager

In this scenario, BW activities are performed in a separate client on the SAP Solution Manager system. This scenario provides increased security, as user access is more restricted. However, you must maintain users separately, and this increases your administration effort. There is no technical benefit.

BW in a Separate, Non-Productive BW System

In this scenario, the BW activities are performed in a separate, dedicated BW system in the landscape. Data is sent to this system from the SAP Solution Manager system via RFC. This is only needed in rare cases, for sizing purposes.

> ℹ **Note**
>
> If you plan to use a separate BW system, it must have the same BW content version (software component `BI_CONT`) as SAP Solution Manager. You cannot upgrade the BW content without restrictions. SAP does not recommend SAP Solution Manager data in a separate BW system which is also already used for other purposes.

CA Introscope Enterprise Manager Strategy

CA Introscope Enterprise Manager must be installed on the SAP Solution Manager host or on a separate host. For more information, see ▮ service.sap.com/instguides ↪ ❯ *Installation & Upgrade Guides* ❯ *SAP Components* ❯ *SAP Solution Manager* ❯ *Release 7.1* ❯ *6 Additional Guides - Introscope* ❯ *Introscope Setup Guide 9.0* ▮.

Agent Overview

The root cause analysis and technical monitoring scenarios in SAP Solution Manager are based on a central agent infrastructure on each managed system.

Diagnostics Agent

The Solution Manager Diagnostics Agent (Diagnostics Agent) is the remote component of the diagnostics infrastructure in SAP Solution Manager. It uses a connection between SAP Solution Manager, as the managing system, and the managed systems, to gather information. This information from the managed systems is then reported to the SAP Solution Manager system for analysis.

More information on the Diagnostics Agent can be found under wiki.scn.sap.com/wiki/display/SMSETUP/Diagnostics+Agents ↪ and SAP Note 1365123 ↪.

> ℹ **Note**
>
> In cases where the SAP or third-party systems to be managed have been set up using virtual host names, install one Diagnostics Agent instance per virtual host name, not per physical host.

You must also use the same SID (by default: DAA, for the first agent installed on a host) and the same administration user (by default: daaadm) for all agents reporting to one SAP Solution Manager system. This is because if the agent relocates (Clustered Environments), the connection of the Diagnostics Agent to the SAP Host Agent is authenticated with the user name. The password of the Diagnostics Agent administration user should be same on all hosts, for support reasons.

If you want to connect an SAP system to more than one SAP Solution Manager system, install one Diagnostics Agent for each Solution Manager system (e.g. DAA reporting to SM1, DAB reporting to SM2, on all virtual hosts of the system to be managed).

SAP Host Agent

The SAP Host Agent is an SAP agent which implements several Software Lifecycle Management processes, such as monitoring & administration, in an SAP system. The main tasks of the SAP Host Agent are monitoring and management on operating system level. It runs once per host, and is the data provider to several SAP monitoring and management solutions.

The SAP Host Agent provides access to the following resources:

- Usage of virtual and physical memory
- CPU utilization
- Utilization of physical disks and file systems
- Resource usage of running processes
- OS & DB information
- Log file monitoring

As some of the web services providing access to the resources used by SAP Solution Manager are protected, for security reasons, establish a trusted connection between the Diagnostics Agent and the SAP Host Agent, by adding the user name of the Diagnostics Agent to a profile parameter of the SAP Host Agent. This is documented in the "System Preparation" section of the setup procedure in the transaction SOLMAN_SETUP, but needs to be done for each physical host.

More information on the Diagnostics Agent is under wiki.scn.sap.com/wiki/display/SMSETUP/SAP+Host+Agent .

Agent Deployment Strategy

Install a Diagnostics Agent on each physical or virtual host and use the "Agents-on-the-Fly" option to deploy agents on all additional IPs (logical hosts) of these hosts dynamically. The agent installation is part of the *Software Provisioning Manager* (SWPM), use always the latest version. More information can be found in the agent installation guide.

> **i Note**
>
> Set up the auto-update function of the SAP Host Agent, as described in SAP Note 1473974 .

SAP LoadRunner by HP

To help you deliver high-performing business processes, and perform, upgrade, and modify existing processes on time and within budget, SAP and HP offer the SAP LoadRunner application by HP to optimize quality, performance, and scalability of end-to-end business processes that run on SAP and non-SAP software.

With SAP LoadRunner, you can mitigate risks related to SAP implementations and upgrades, as well as changes in your production systems. Deployed together with SAP Solution Manager, these applications can help you optimize the entire application life cycle, so you can:

- Implement, upgrade, and go live with SAP software, on time and on budget
- Enhance application quality and reliability in highly customized, rapidly changing, heterogeneous environments
- Improve performance and scalability of business processes that depend on SAP and non-SAP software

Using SAP LoadRunner, you can deliver high-performance business processes, and perform, upgrade, and modify existing processes, on time and within budget.

Although there is no direct integration with SAP Solution Manager, SAP LoadRunner can be run from the same system.

Search and Classification (TREX)

Search and Classification (TREX) in SAP Solution Manager offers an integrated set of services. TREX services include search and retrieval in large document collections, text mining, automatic document classification, and search and aggregation over structured data in SAP applications. TREX can handle text from documents in numerous formats, including Microsoft Office and Adobe formats (PDF), and more than 30 languages. TREX search options, such as exact, boolean, fuzzy, or linguistic search, and classification options such as query-based or example-based classification, offer great power and flexibility to end users. In SAP Solution Manager, TREX enables document search via keyword within the document. TREX is mandatory to search the solution database in the service desk scenario.

SAP Central Process Scheduling by Redwood

The SAP Central Process Scheduling application by Redwood schedules and monitors jobs in current and old releases of AS ABAP systems (as of basis release 3.1), centrally. It is fully integrated in SAP NetWeaver. Depending on the business needs, SAP business applications trigger scheduled activities. You can now manage jobs and job chains conveniently, using a graphical user interface. For test or demo purposes, you can run SAP Central Process Scheduling on the AS Java of SAP Solution Manager. For production use, run SAP Central Process Scheduling on a dedicated system, as it is mission-critical.

Adaptive Computing Controller (ACC)

The Adaptive Computing Controller (ACC) controls an adaptive computing landscape from a single point, through observation, operation and dynamic resource distribution. With adaptive computing, hardware, software, and system services can adapt to changing business needs. In the Adaptive Computing Controller, the runtime data of logical and physical landscapes can be monitored, application services can be started/stopped/relocated, and hardware resources can be assigned to application services. The operation can also be mass executed and be scheduled as tasks to be executed. For production use, run ACC on a dedicated system, as it is mission-critical.

SAP Global Support Backbone

The SAP Global Support Backbone is the set of applications which manage the customer relationship and provide services to the customer and partner ecosystem. The SAP Global Support Backbone hosts basic information on customer's installations and products and processes used, and the partner ecosystem. The SAP Global Support Backbone gives SAP experts access to the customer network, by remote connection, to collect the technical information required to solve customer issues, when the required information is either not available in the SAP Global Support Backbone, or may be out-of-date. By integrating the partner ecosystem into this scenario, these capabilities can be extended.

SAP Solution Manager is connected to the SAP Global Support Backbone by both RFC and HTTP connections. The RFC connection transmits SAP EarlyWatch Alert data (for production systems), and support messages to SAP Active Global Support. The HTTP connection accesses SAP Service Marketplace from SAP Solution

Manager. Examples of this connection would be to search SAP Notes from within a support message in the service desk, downloading maintenance certificates, and getting patches and stacks from maintenance optimizer.

For more information about the SAP Global Support Backbone, see SAP Support Portal, at ▶ support.sap.com/ ↪ ❯ *Support Programs & Services* ❯ *Support Programs* ◗.

Change and Transport System (CTS)

The Change and Transport System (CTS) organizes development projects in ABAP Workbench and in Customizing, and transports the changes between the SAP systems in your system landscape. You can transport Java objects (AS Java) and SAP-specific non-ABAP technologies (such as Web Dynpro Java or SAP NetWeaver Portal), in your landscape, as well as ABAP objects.

Since the CTS is widely-used, and has been for quite some time, many customers are not aware of the newest enhancements that transport non-ABAP objects with the CTS. With Change & Transport System (CTS, usage type AS ABAP) and the Development Infrastructure (usage type DI based on AS Java), SAP NetWeaver provides a comprehensive set of functions to control transports in both ABAP and Java environments. The Change & Transport System (CTS, SAP NetWeaver usage type AS ABAP) is enhanced, as of SAP NetWeaver 7.0 SPS 12, to transport non-ABAP object types, such as Process Integration (PI), SAP NetWeaver Portal.

SAP often uses the term *Enhanced Change and Transport System (ECTS)* to refer to these enhancements.

For more information about CTS, see the SAP Community Network, at scn.sap.com/community/it-management/alm/software-logistics ↪.

SAP NetWeaver Development Infrastructure (NWDI)

The SAP NetWeaver Development Infrastructure (NWDI), together with the SAP NetWeaver Developer Studio, provides a complete Java development environment for developers, administrators, quality managers, and testers. Occupants of each role find everything they need for the software creation process in NWDI's central services. The main benefit for developers of working in a central development environment, is having direct access to all development objects for the specific project, in the correct version, including both sources and archives, pre-defined or recently created. For administrators, the centralized approach means they can set up and control different development projects in one application. For the quality manager, changing the state of the test environment follows a well-defined process.

SAP Solution Manager does not have direct integration with NWDI, but objects created in NWDI can be put in transport requests, which can be tracked and released by the change request management scenario of SAP Solution Manager.

5.3 Reference System Landscapes

When planning system landscapes, customers often ask for reference landscapes. Here are some examples of landscapes, depending on the types of managed systems, and customer size.

Pure ABAP Landscape

If you have a pure ABAP system landscape, you have to use SAP Solution Manager as the central monitoring and support platform.

The ABAP-based systems still need to be defined in SAP Solution Manager. It is mandatory to also have an SLD in the landscape (see following Figure), but in this rare case, the SLD can be installed on the SAP Solution Manager system.

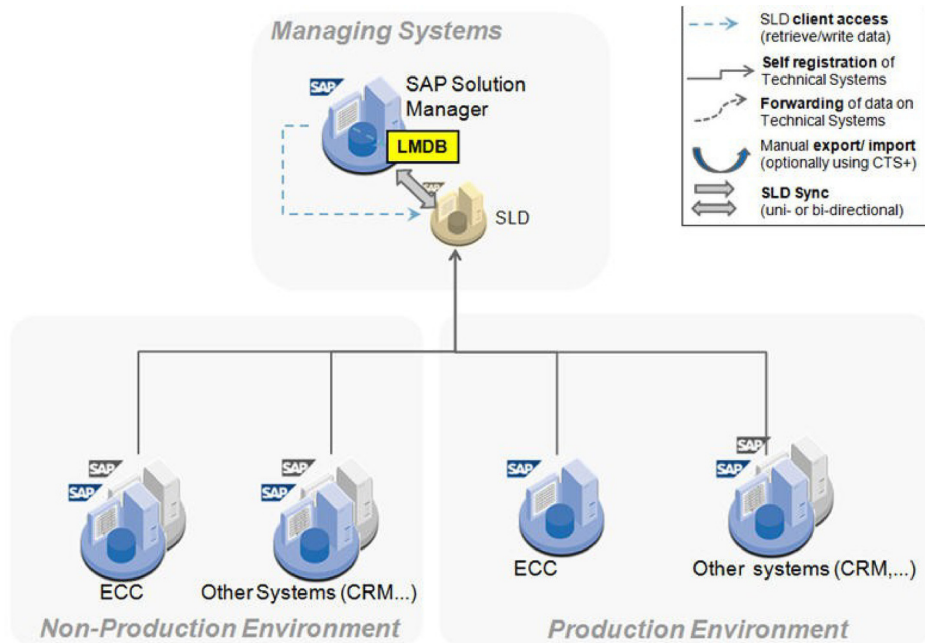## Small and Medium Customer Landscapes with Java

Figure 10: Small and Medium Customer Landscapes with Java (non-PI and non-WebDynpro Java)

If you are using Java productively (for example, if you are using SAP NetWeaver Portal, PI, Web Dynpro, SAP Employee Self-Service or SAP Manager Self-Service, as part of the SAP ERP 6.0 application), you have to also use SLD, as described in the next chapter.

The root cause analysis, technical monitoring and technical administration scenarios are already fully integrated into SAP Solution Manager as the central operations hub. These functions are essential for monitoring, administration and root cause analysis tasks.

You should set up a central runtime System Landscape Directory for the SAP Solution Manager. This separates your managing system (SAP Solution Manager) from the managed systems in your landscape. Configure the SLD data suppliers of your SAP Solution Manager system to send data to the central runtime System Landscape Directory. The SAP Solution Manager will synchronize the data with the LMDB in SAP Solution Manager, as described in Interoperability of Central SAP Solution Manager Systems [page 36].
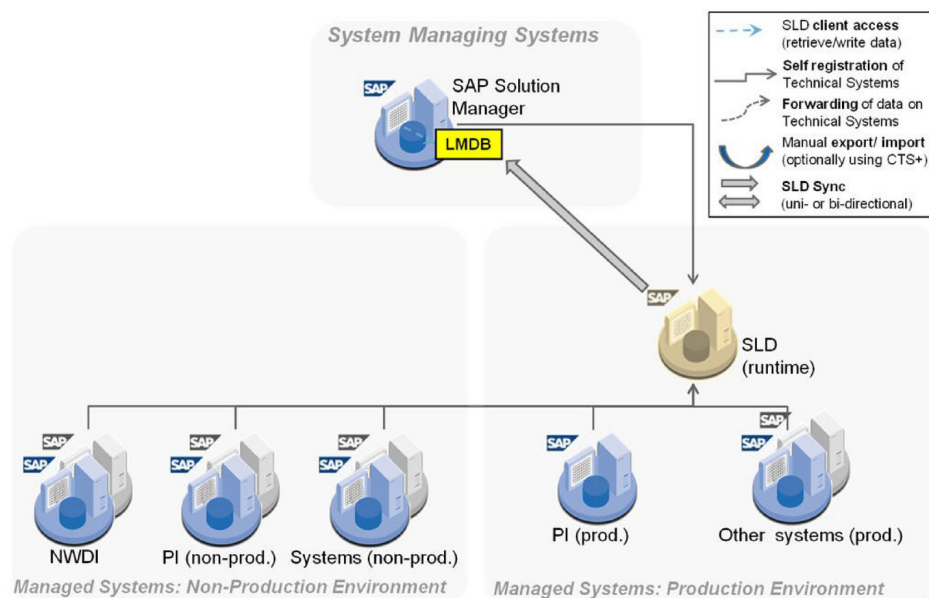
Large Customer Landscapes with Java

Figure 11: Large Customer Landscapes with Java (with PI or WebDynpro Java)

Large customers, who have large and distributed landscapes, administered by different groups, or separated for security reasons, can distribute their operations. In contrast to the centralized landscape for small and medium customers described above, large customers can put parts of their central management functions on extra hosts or systems, for performance or policy reasons.

- You can set up an extra system or client for Central User Administration (CUA).
- The Change and Transport System (CTS) can be run on an extra system, although it is not performance or data-intensive. You can set up an extra system for central CCMS monitoring. Depending on the customization and the landscape size, central CCMS can generate a high system load.
- You can put CA Introscope Enterprise Manager on a separate host. The other considerations described above for small and medium customers (such as the setup of the System Landscape Directory) also apply to large customers.

You have to decide how and where you want to run System Landscape Directory. A gateway that receives data from ABAP data suppliers is also required on the host of a System Landscape Directory.

5.4   Solutions in SAP Solution Manager

In the last few years, the IT world of SAP customers has become much more challenging. Instead of one single R/3 system, there are multiple systems, integrated by business processes, involving different SAP Business Suite products and middleware. Data and process consistency is guaranteed by messaging, data and user interface unification, not a single integrated database design. It has become much more challenging to keep track of the entire system landscape. In the event of an incident or problem, it is much more difficult to judge the relevance of particular activities. This situation has made it essential that SAP customers, and SAP Support, have a central source of current information on the customer solution landscape.

Solutions and Projects

In SAP Solution Manager, a solution comprises an entity of information about systems, software components, servers, databases and business processes. The solution is where the productive business processes and the related systems and component software states are documented.

Once a solution is created, the information about existing solutions is available to all SAP Solution Manager operational and optimization services. For example, systems can be monitored, and service level reports can be created, based on monitoring thresholds. System operation procedures can be configured, automated and controlled via service level reporting. Business process monitoring and interface monitoring can be set up and analyzed during system operation. SAP EarlyWatch Alerts, and the results from service sessions, can be reported in the solution context.

Issues related to problems that arise during solution operation can be created and tracked.

The solution process structures, process documentation, and monitoring data can all be accessed by SAP Active Global Support, during service delivery or problem resolution.

The information documented in a solution supports efficient handover from the project phase to the operation phase.

The solution directory contains the information of all the solutions in an SAP Solution Manager system. During handover to production, the SAP Solution Manager project content is copied into the solution directory. The scenario, process, process step, master data, organizational unit structures and all linked documents, configuration, transactions, test cases and learning maps, are available to the solution operation.

A maintenance project can be linked to a solution, to manage maintenance and continuous improvement, allowing controlled change of solution processes. For example, once a process implementation has been handed over to operation, maintenance activities that change process documentation, configuration, and test cases, are managed in a dedicated maintenance project. Whenever a change is requested, all required items can be checked out from the solution, into the maintenance project. After changes are deployed to production, items are checked in to the solution, so the solution can be updated in a consistent, safe, efficient, and well-documented manner.
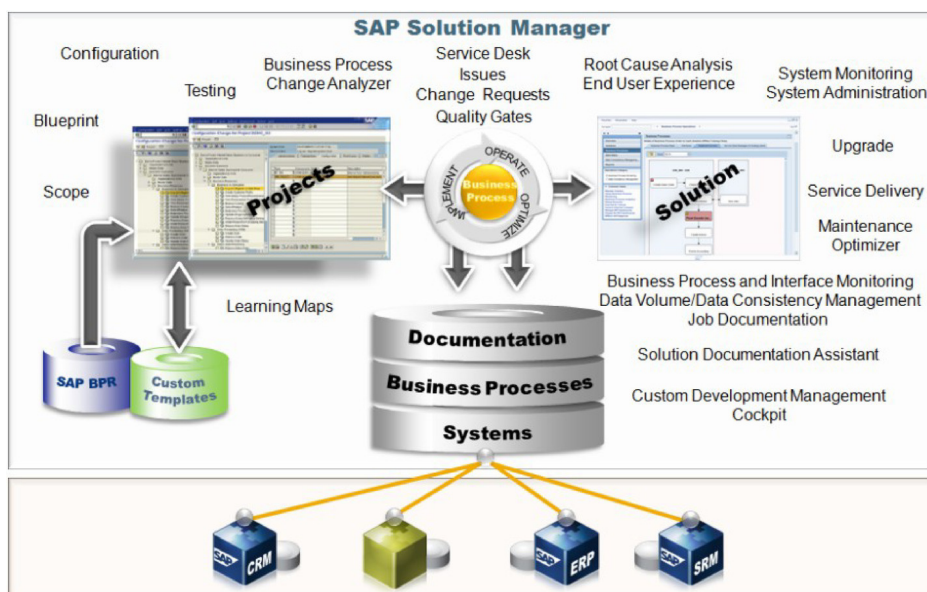

Figure 12: Application Life-cycle Management with SAP Solution Manager

The steps of the process are maintained in the *Structure* tab. Methods to maintain a process import the process from an implementation project, the Business Process Repository, or another solution.

Defining a Solution

For a detailed description of how to create and tailor a solution, see SAP Service Marketplace, at

▶ support.sap.com/solutionmanager ✦ ❭ *Knowledge Transfer* ❭ *How-to Documents* ❭ *SAP Solution Manager - Solution Concept and Design* ❭.

Processes that Require a Solution

A solution is required by some SAP Solution Manager processes.

- **Service Level Management, Business Process Monitoring**: When using SAP Solution Manager for reporting activities such as SAP EarlyWatch Alert, SAP EarlyWatch for Solutions or Service Level Management, a solution is required, to establish a relationship between the system components for end-to-end reporting.
- **Central System Administration**: A solution is required for planning and executing administrative tasks.
- **Service Delivery**: SAP Solution Manager contains the tools and content for both customers and SAP to deliver services. These tools require a solution.

For more information, see the *White Paper: The SAP Solution Landscape* at scn.sap.com/docs/DOC-31897 ✦.

5.5   Supporting Multiple Customers

SAP Solution Manager is flexible enough to support multiple customers at the same time, as in a value-added reseller (VAR) scenario. When creating solutions for VARs, a separate solution be created for each customer. This allows the VAR to restrict access to the customer data and isolate each customer's projects and monitoring information. When connecting customer systems to SAP Solution Manager, you can use more than three characters for system IDs (SIDs). This prevents conflicts for example, if the customers being supported all have production (PRD) systems in the VAR's SAP Solution Manager system.

The service desk in SAP Solution Manager can also support multiple customers, and dedicated network connections to SAP allow each customer's messages to be forwarded to the SAP Global Support Backbone for processing.

For more information, see SAP Support Portal, at support.sap.com/solutionmanager ✦.

5.6   Users and Roles

SAP Solution Manager uses the user management and authentication mechanisms provided by the SAP NetWeaver platform, in particular the SAP Web Application Server ABAP. If you use Solution Manager Diagnostics, the user management and authentication mechanisms provided by the SAP Web Application Server Java are also used. The security recommendations and guidelines for user administration and authentication, in the security guide for SAP NetWeaver Application Server ABAP and the security guide for SAP NetWeaver Application Server Java, also apply to SAP Solution Manager. The guides on SAP Help Portal at ▶ help.sap.com ✦ ❭ *Technology* ❭ *SAP NetWeaver Platform* ❭ *SAP NetWeaver 7.0* ❭ *Security Information* ❭ *Security Guide* ❭.
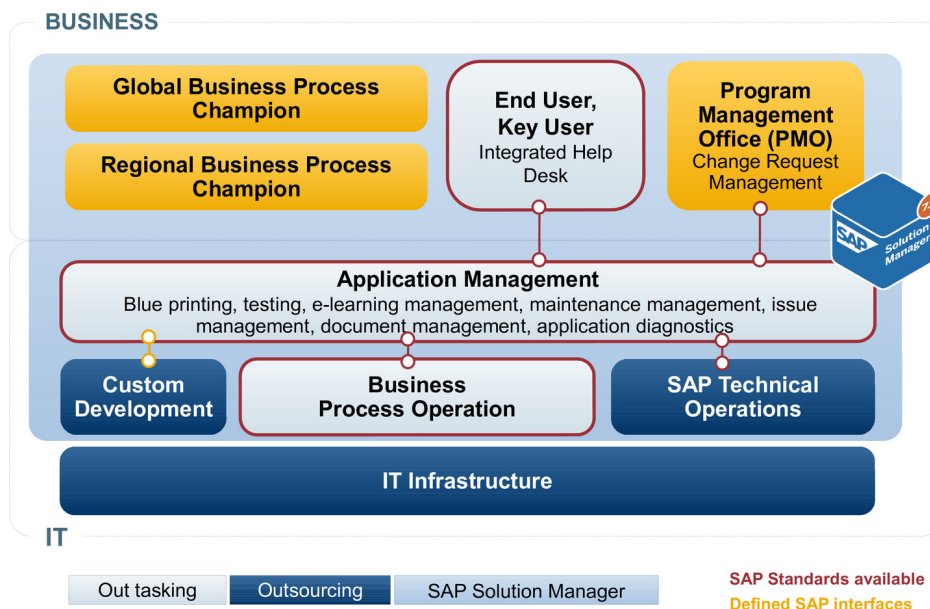
Figure 13: Organizational Model

Network and Communication Security

Overview – Network Topology

Your network infrastructure is extremely important in protecting your system. It needs to support the communication necessary for your business and your needs, while preventing unauthorized access. A well-defined network topology can eliminate many security threats based on software flaws (at both the operating system and application level) or network attacks, such as eavesdropping. If users cannot log on to your application or database servers at the operating system or database layer, there is no way for intruders to compromise the machines and gain access to the back-end system database or files, and if they cannot connect to the server LAN (local area network), they cannot exploit well-known bugs and security holes in network services, on the server machines. The network topology for SAP Solution Manager is based on the topology of the SAP NetWeaver platform. The security guidelines and recommendations described in the security guide for SAP NetWeaver (see SAP Help Portal, at ▶ help.sap.com ↪ ▶ *Technology* ▶ *SAP NetWeaver Platform* ▶ *SAP NetWeaver 7.0* ▶ *Security Information* ▶ *Security Guide* ◀) also apply to SAP Solution Manager.

Remote Supportability Overview

The following summary illustrates remote supportability with SAP Solution Manager. For a support message sent to SAP, the service engineer needs to access the customer solution landscape, to perform root cause analysis. This connection is established from SAP to the customer environment, securely and reliably. The service engineer enters the customer environment at the defined central location, and can access the customer's SAP Solution Manager.

This single point of access already provides an overview of the entire landscape, and navigation in it. Information, such as log data or configuration data, is consolidated in SAP Solution Manager, for reference. Work centers in

SAP Solution Manager provide a graphical user interface which presents the information in a uniform format and style, so that it is intuitive and easy to get to the relevant information and to the root cause of the problem.

Through this support infrastructure, the service engineer can observe the environment and display, and even download, relevant information to solve the issue. He or she cannot make changes in the customer solution landscape.

Remote access connects customer's network to the SAP Global Support Backbone, accelerates issue resolution and delivery of support services, and reduces costs. The support infrastructure provides remote access to the required tools and information at customer side.

There are several different connection types. The customer releases the required connection types once per system. The most important connection types are the following.

- SAP GUI based connection
- HTTP Connect – URL access provides access to http-based applications
- Application sharing methods or access to operating system level and collaboration

For a list of all connection types, see SAP Support Portal, at ▶ support.sap.com ➤ ▶ *Remote Support* ❭.

5.7   Collaboration with SAP

The following channels (using different RFC destinations) are used to collaborate with SAP, to exchange information between the SAP Solution Manager system and SAP.

- SAP EarlyWatch Alert

  SAP EarlyWatch Alert is an automatic diagnostic service that SAP Solution Manager uses to monitor SAP and non-SAP systems. It identifies possible problems early, avoid bottlenecks, and monitor the system performance.

  The system sends a session to SAP, initially and monthly, using SAP Service Marketplace. The monthly SAP EarlyWatch Alert for production systems automatically refreshes the system data in the SAP Support Portal. Additionally, the analysis of the weekly SAP EarlyWatch Alert reports is sent to SAP if they are rated *Red: Very critical/error*. In this case SAP Support checks the problems and contacts you, if required, to discuss possible activities.

- Support Message

  If you can neither process a support message yourself, nor find a solution for it in SAP Notes or in your solution database, you can forward it to SAP Support. You can search for SAP Notes in SAP Service Marketplace, from a support message.

  You can send updates to SAP, and updates from SAP are automatically pulled into the support message in SAP Solution Manager, by a background job.

- Service Plan

  The manual registration of the solution at SAP enables SAP to create a service plan tailored to your needs. The service plan consists of SAP-delivered services, and is created at SAP. It is replicated into your SAP Solution Manager system, and enables the delivery of SAP services for your solution. The services are performed in your SAP Solution Manager system.

  Updates of the solution are automatically sent to SAP, and updates of the service plan are automatically pulled from SAP.

- Expertise on Demand Request

With an expertise on demand message, an SAP expert can be requested, from an issue. An expertise on demand (EoD) request is a customer message with the component `XX-EOD-*`.

You can send updates to SAP, updates from SAP are automatically pulled into the support message in SAP Solution Manager by a background job.

- Top Issue

  Top Issues can be sent to SAP with the corresponding button in the Top Issue.

  After this initial sending, updates of the Top Issue are automatically sent to SAP. The Top Issue is not updated from SAP.

- Maintenance Optimizer

  The maintenance optimizer leads you through the planning, download and implementation of support package stacks, using an RFC connection to the SAP Software Distribution Center in SAP Service Marketplace.

- Synchronize System Data with SAP Support Portal

  The system data in the *Landscape Management Database* (`LMDB`) and in the SAP Support Portal is automatically synchronized.

  Depending on the customizing settings, the system data in the SAP Support Portal can be refreshed automatically for all systems, periodically (for example daily), or manually, as required. For more information, see *Other Infrastructure Setup Activities* in the SAP Help Portal, see link in Useful Links [page 80].

6 ALM Processes in Detail

This chapter introduces all ALM processes in SAP Solution Manager. The descriptions tell you which processes support your application management needs. For more information about each process, see SAP Service Marketplace, at ▌▶ support.sap.com/solutionmanager ↝ ▶ *Processes* ▐.
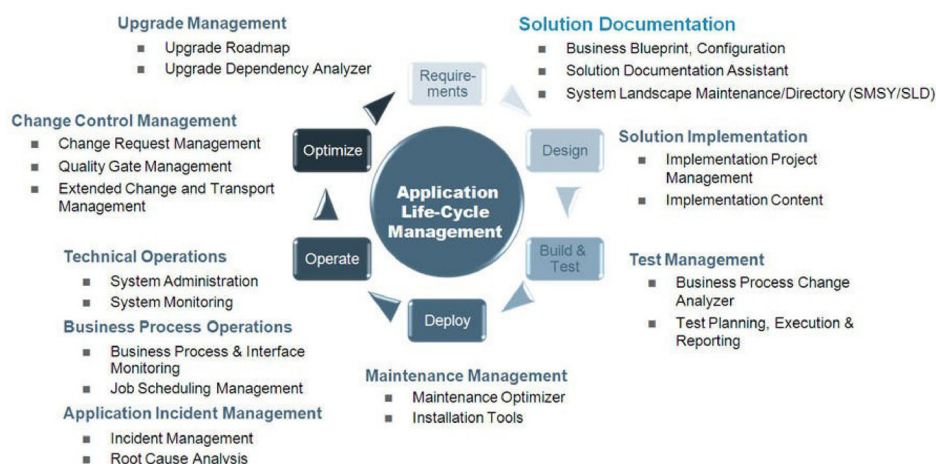

Figure 14: Application Lifecycle Management Processes

6.1 SAP Engagement and Service Delivery

SAP Solution Manager is the central platform for the delivery of SAP services for the following areas: risk minimization, optimization of SAP solutions, and knowledge transfer.

SAP services in SAP Solution Manager are services which help you to monitor and optimize the performance and availability of your system landscapes, and minimize your system operation risks.

After you have sent your solution description to SAP, a service plan is tailored to your individual needs. This service plan is a schedule describing which SAP services are to be carried out for which systems in your solution, at what time. It is transferred to your SAP Solution Manager. The service plan contains services delivered either remotely or by an SAP consultant on-site.

During these on-site and remote services, SAP consultants perform their analysis based on data that is collected automatically from managed systems, and processed by checks in the SAP Solution Manager. They generate a report with the results, that is stored locally.

The SAP service consultants creates Issues in the issue management of SAP Solution Manager, which is an interface between your support organization and SAP Support. Issue tracking is available to support the follow-up of the outcome of the SAP services. Issues are descriptions of problems that have to be solved by your organization.

If you need help from SAP to solve an issue, you can generate an expertise on demand message in the issue management. This requests a consulting service, which provides SAP experts to fill your short to medium-term needs.

Besides these SAP-delivered services, there are also guided self-services and automatic services, such as SAP EarlyWatch Alert, available in SAP Solution Manager. The SAP EarlyWatch Alert is scheduled for single systems

and for solutions, and its data can be forwarded to SAP for further analysis. An SAP EarlyWatch Alert report indicates areas of optimization potential that can be addressed by carrying out guided self-services, or requesting SAP-delivered services in an SAP Service Request.

More Information

SAP EarlyWatch Alert is a prerequisite for all SAP services.

For more information about the scenario description of SAP services delivery and configuration, see the documentation on SAP Help Portal, at ▶ help.sap.com ⬈ ▶ *Application Lifecycle Management* ▶ *SAP Solution Manager* ⟩.

For more information about security, see the security guide on SAP Service Marketplace, at service.sap.com/securityguide ⬈.

6.2   Solution Documentation as Basis for ALM

Solution Documentation, consisting of technical landscape and business process documentation, is the basis for all other SAP Solution Manager capabilities. It describes a customer's technical components (SAP and non-SAP), its core business processes, and interfaces, it includes custom code/modification documentation, and links to supporting technical objects, such as transactions and programs.

The correct use of implementation projects automatically produces sufficient solution documentation in the operations and optimization phase. If you start with the documentation in the operations phase, re-document your core business processes in SAP Solution Manager. Only a subset of the information required for a complete implementation project is then needed.

Solution documentation can be continuously enriched along the ALM lifecycle phases:

- Design: Create global business process templates and specifications, e.g. for later roll-out of regional implementation projects
- Design/Build: Create or adjust business process structure, locally, during your regional implementation project
- Build/Test: Extend business process documentation during solution configuration, e.g. with custom code documentation, configuration information, test cases
- Operate: Re-document or adjust your business process documentation during operations, e.g. adjust process documentation, after go-live
- Optimize: Verify your business process documentation before upgrades, e.g. delete obsolete information and unused custom code
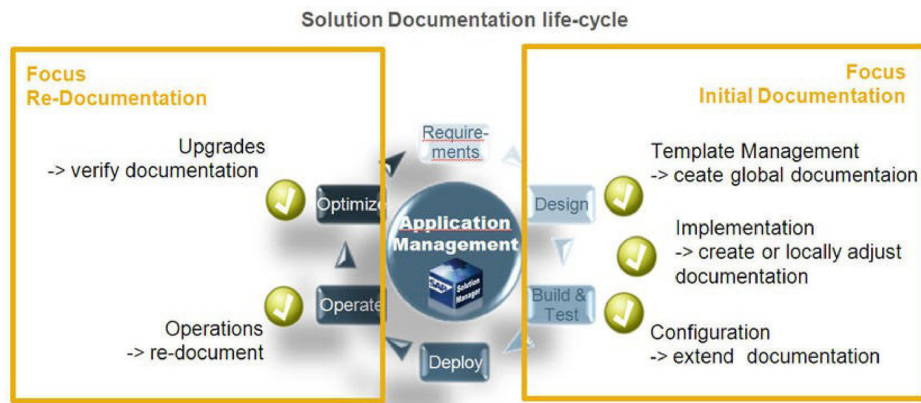
Figure 15: Solution documentation lifecycle

Solution Documentation Benefits

Solution Documentation is the basis for the entire application management lifecycle. It makes customer's solution landscape and business processes transparent, and fully exploits the potential of SAP Enterprise Support.

Figure 16: Solution Documentation covered by SAP Solution Manager

The best documentation is worthless if it is not up-to-date. SAP Solution Manager allows you to update your Solution Documentation cost-efficiently and under control.

The main Solution Documentation capabilities are:

- Business Blueprint
- Solution Configuration
- Solution Documentation Assistant
- Landscape Management Database (LMDB) and System Landscape Directory (SLD)

Solution documentation is a key enabler for business and IT alignment. Its transparency can accelerate IT activities and improve their results. SAP Solution Manager enables the documentation of SAP Solutions. Solution Documentation documents the following key elements:

- core business processes
- related technical objects, such as transactions, programs, custom code, background jobs, interfaces

- related (non-SAP) system and software components

The documentation (project) should be in English. Enterprise Support requires a permanently-available English-speaking CCoE, and this CCoE contact can translate the information in SAP Solution Manager, if necessary, but internal and external communication is generally more efficient with English as the default project language.

Solution Documentation Detailed Definition

Solution documentation contains 2 types of documentation, technical landscape documentation and business process documentation, maintained by different experts, depending on the documentation content.

Technical landscape documentation is mainly created during the basic configuration of SAP Solution Manager, and documents systems, servers, databases and software components. It is written by system administrators and technical SAP Solution Manager experts. The data is displayed and maintained in the SAP Solution Manager Administration and System Landscape Management work centers.

Business Process Documentation relates this technical documentation to business information. It documents (core) business processes, project documentation, test cases, interfaces and custom code. It is maintained by solution architects, e.g. for custom development and interface specifications, business process experts, to document (core) process flow, project members, to document test cases and project-specific customizing, and functional SAP Solution Manager experts, for simple transfer, if good process documentation is available. The data is displayed and maintained in the Implementation/Upgrade and Solution Documentation Assistant work centers.

Technical Landscape Documentation

The Technical Documentation is part of the technical configuration of the SAP Solution Manager. This process comprises the following phases:

- Provide central, reliable and up-to-date system landscape information for SAP and third-party tools
- Documents hosts, databases, systems, products, software components, system groups and logical components

Business Process Documentation

The Business Process documentation is the central documentation of business processes, including related system information, and comprises the following phases:

- the availability of all core business processes in the Business Blueprint. It can be imported into the Solution Directory
- Business Blueprint allows central and controlled change of combined business process and related system landscape documentation
- documentation of business processes, and of customer-specific settings, test concepts, and training materials
- Information for the Business Blueprint and implementation phases is supplied for each of the levels in the BPR (master data, organizational units, processes, process steps), as well as interfaces
- The business process documentation is generally part of an implementation, maintenance, or upgrade project. You create it during the business blueprint phase (transaction SOLAR01 in SAP Solution Manager)

Custom Code Documentation

Customer developments can be programs that are implemented in SAP applications, independent applications that are operated in addition to an SAP application and that are connected to it via interfaces, or changes to existing standard applications (modifications). Custom code documentation:

- Comprises a short description of the development and its related development objects, e.g. programs in the customer namespace.
- Can be created in the configuration phase using transaction SOLAR02. Until creation, the developer works on the development tab.
- When released, the finalized program and transaction are maintained on the Transactions tab. Only then can it be reused for other SAP Solution Manager capabilities, such as Solution Documentation Assistant and Business Process Change Analyzer.
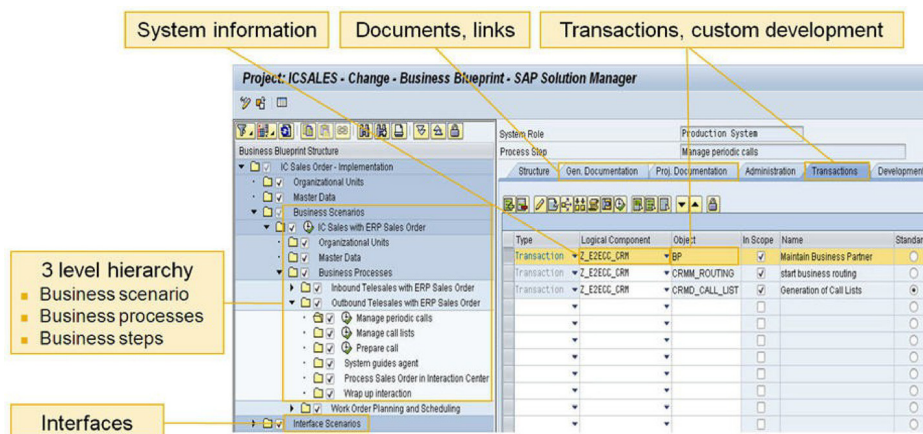

Figure 17: Custom Code Documentation

6.3 Solution Implementation

Support implementation with SAP Solution Manager application management provides blueprint, configuration, and visualization of test plans and test scripts, and stabilizes documentation for short-term control of project phases and long-term support and training. SAP Solution Manager gives access to the tools, content, and methodology customers need to implement and optimize their solutions, from both a functional and technical perspectives.

SAP Solution Manager provides the following:

- Roadmaps describing how to organize and run implementation projects

  The ASAP Roadmaps provide proven, practical, comprehensive, repeatable, and rich implementation methodologies, that enable speedy, focused implementation of SAP solutions. ASAP Roadmaps cover the most important aspects and phases of an SAP solution implementation, enhancements, or upgrade, following the Accelerated SAP (ASAP) principles.

  The Run SAP Roadmap provides information and guidance on how to implement solution operations, gather knowledge of how to scope the operations to be implemented, prepare a detailed project plan, and set up and run an SAP solution efficiently. The Run SAP Roadmap focuses on application management, business process operations and SAP NetWeaver administration.

- Business Process Repository, providing the latest implementation content, to outline and describe a customer-specific solution

- Business Function Scope, providing the latest Business Function content, to design, configure and test customer-specific solution.

- Rapid Deployment Solution – Solution Packages, providing template content and Solution Builder Integration, to implement and configure predefined packages automated.

- Proven implementation features such as project administration and Business-Blueprint-relevant functionality, Business Function activation, integrated use of configuration (IMG) and testing facilities

  o Project administration or project definition supports initially setting up a project, during project preparation, and enables you to perform major administrative tasks, such as the definition of project standards, during the entire project.

    The integration of projects in project administration and SAP Portfolio and Project Management projects allows you to plan and manage projects in an IT environment, using SAP Solution Manager functionality. You can enrich your SAP Solution Manager projects with the project management capabilities of SAP Portfolio and Project Management, including detailed planning and structuring of your project, and resource management, and you can hand over your plans to realization, using the integrated SAP Portfolio and Project Management and change request management. Time and status feedback allow you to monitor the progress and resource consumption of your project.

  o In SAP Solution Manager, you can define and manage a system landscape for implementation or template projects, which allows interaction with, and navigation into, a related system landscape, for example during configuration and testing, centrally.

  o The definition and documentation of project scope in Business Blueprint is accelerated by the Business Process Repository providing the latest implementation content, and the use of the underlying SAP Knowledge Warehouse. For customers with Business Blueprint-relevant content, the Business Blueprint is accelerated by the file-based upload functionality. You can format the content of a Business Blueprint for an existing project using a file processing program, and upload it to the SAP Solution Manager project. The Business Blueprint documents the scope of the business processes and process steps in an implementation project, from a business and technical perspective, in detail.

  o Activating the Business Functions is accelerated by the Business Function Scoping in SAP Solution Manager. When implementing business functions, you have to activate them first in the managed system. Business Function Scoping supports consistency checks and activation of scoped Business Functions centrally from SAP Solution Manager.

  o SAP Solution Manager can create an interim or a final version of the conceptual design, at any time, by generating a Business Blueprint document.

  o During the configuration phase, business requirements specified in the Business Blueprint phase in the related system landscape, are configured. SAP Solution Manager, as the central platform for the project team, provides access to the related project implementation guides (IMGs), and use of other customizing technologies, such as business configuration sets (BC Sets) and customizing distribution.

  o SAP Solution Manager can create an interim or final version of the configuration of the managed system, at any time, by generating a Configuration document.

  o Testing functions allow test coordinators to create test cases and test plans, centrally, for sequence and integration tests. Testers can execute their test packages centrally, leveraging existing testing technologies for automatic testing, such as CATT and eCATT.

  o E-Learning Management ensures knowledge transfer to the daily business. SAP Solution Manager E-Learning functions support creating or changing training materials for the different parties involved. You can organize, prepare and distribute e-learning materials for specific user roles. Users can undergo their training decentrally, and their results and feedback can be evaluated by the training team.

- Access to, and use of, tools and technologies to cluster customizing (BC Sets), to compare and distribute configuration settings in various components in your landscape

- New innovations and requirements call for changes to an implemented scenario, process, or process step. The comparison tool for Lifecycle Management enables you to quickly identify changes made in any project phase, and copy and adjust them, to ensure consistent and updated documentation.
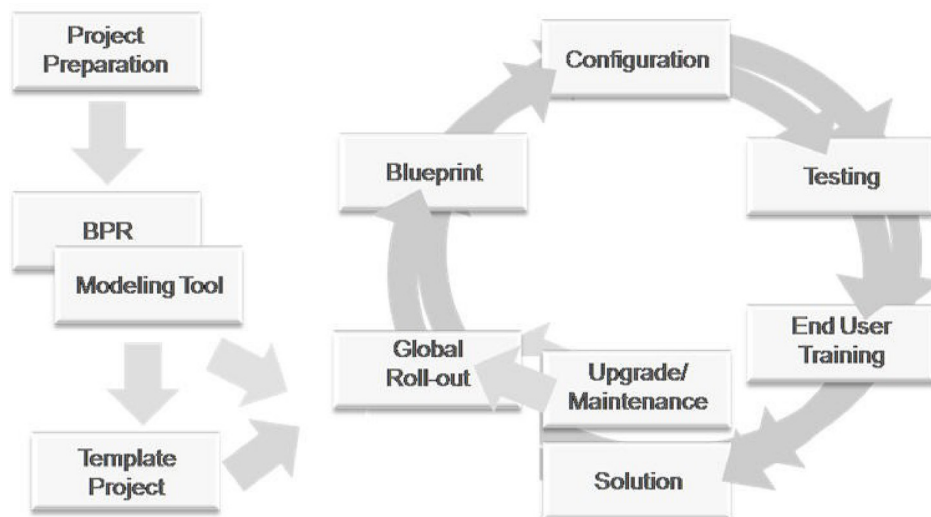

Figure 18: Solution Implementation Phases

6.4 Template Management

Company-wide process harmonization and standardization helps organizations to improve their efficiency and decrease overall operating costs, and it is becoming increasingly important in order to quickly adapt business models and processes to dynamic market demands.

The Template Management approach enables you to create processes as templates, which need be designed only once and can then be reused in various solutions. Templates contain process structures, process documentation, transactions, configuration settings and documents, as well as developments such as test cases and roll-out training materials.

Rollout Projects

You can reuse templates straight away in rollout projects, without intensive preparation, so you can go live faster and need fewer resources in your rollouts, because business processes only need tailoring and testing in accordance with local or business requirements.
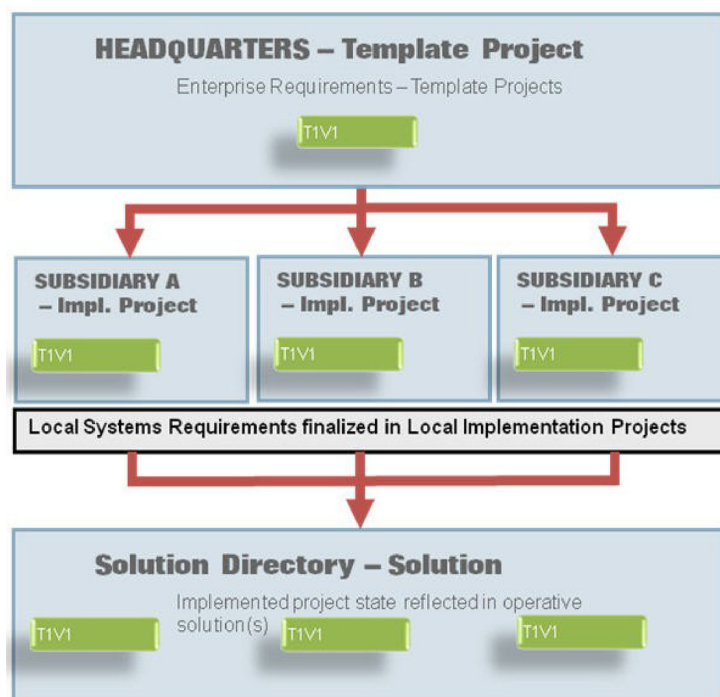
Figure 19: Global Rollout Process

Optimize, Compare and Adjust

Another way of reducing the amount of adjustment needed in rollouts, if a new template version is available, is to use a comparison tool, which automatically highlights changes and new features, and provides comparison and adjustment functions.

Global Attributes

To specify the extent to which rollout projects can make changes in delivered templates that are being implemented, you can specify various global attributes, from global, which does not permit changes to standard company-wide processes, through various intermediate levels, to local, which gives rollouts the most flexibility.

More Information

For more information about the Template Management, see SAP Support Portal, at ▶ support.sap.com/ solutionmanager ↪ ▶ *Processes* ◢.

6.5   Test Management

Test Management is a tightly integrated into the software change process. For a new SAP solution, this process starts with a Business Blueprint which specifies the customer's business, and related test descriptions, based on the business requirements. If an existing solution is to be updated, the impact of the change on existing business processes is analyzed. A change impact analysis indicates the areas on which to focus testing, and thus allows the specification of a risk-based test scope. Tests can be performed manually, based on a test case description, or automatically in automatic test scripts. The test result is documented. Errors should be addressed directly to the

area responsible. In some industries, such as pharmaceuticals, test results must be documented in more detail, for example how the test was performed, which data was used, screen shots, and so on, to provide traceability for external audits. The test coordinator or project lead needs transparency of test progress and error resolution. This enables you to decide whether the overall test is finished, and whether the change can be applied to the productive system.
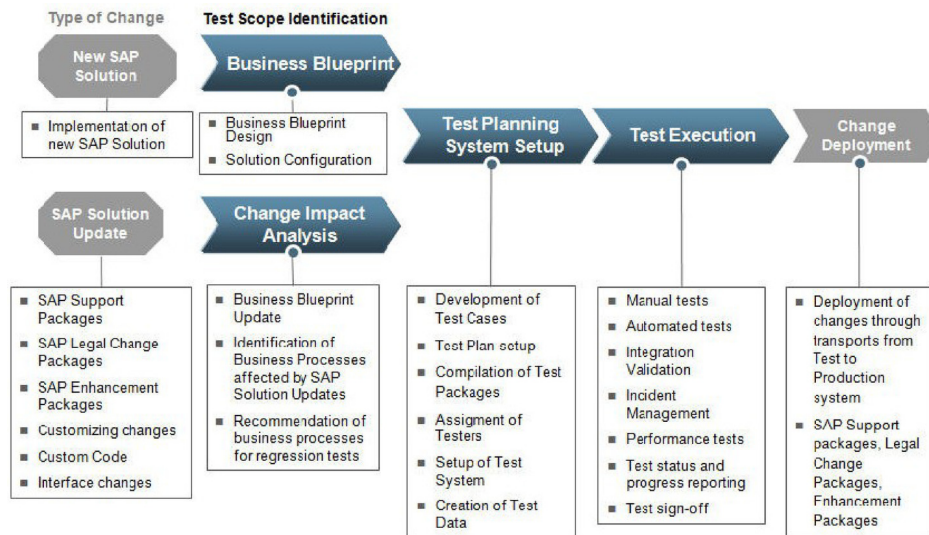

Figure 20: End-to-End Test Process in the SAP Application Life Cycle

Test Options

Customers can use a combination of the SAP Solution Manager test capabilities and solutions from partners or third parties. With SAP Solution Manager 7.1, there are three options for end to end test management of SAP solutions.

All three options support the entire testing process, from the Business Blueprint and change analyses, to test requirements, planning and execution, problem handling, quality gate management, and transporting changes to the production system. In all three options, SAP Solution Manager plays a pivotal role in bringing together technical and business aspects. Each option features comprehensive test management functions which offer optimum support for coordinating and executing tests.
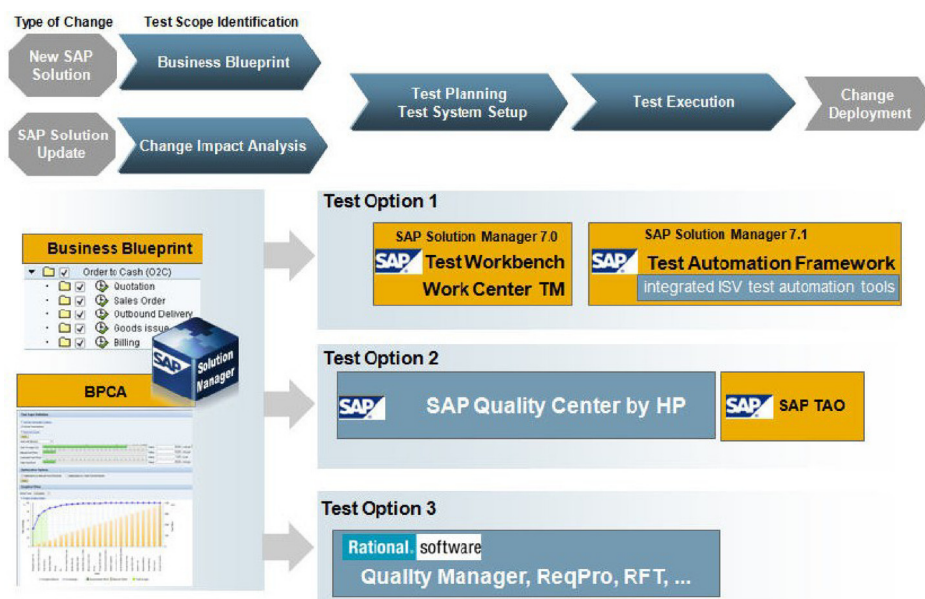
Figure 21: Test Options with SAP Solution Manager 7.1

Risk-based Test Scope Identification

The Business Process Change Analyzer in the SAP Solution Manager Enterprise Edition helps you identify business processes affected by a planned software change. The following use cases are supported:

- Change impact analysis of customizing changes affecting business processes

- Change impact analysis of custom code developments affecting business processes

- Planned activation of business functions affecting business processes

- Change impact analysis of the deployment of SAP Support Packages (SP) and/or Enhancement Packages (EhP). This is a new feature with SAP Solution Manager 7.1 through the new Test Scope Optimization approach, BPCA.

The result is the following:

- Identification of critical business processes affected by the planned change. This helps the customer's change committee to decide which support packages, SAP enhancement packages and transports to apply to the productive SAP system.

- Basis for risk-based test planning

SAP Solution Manager 7.1 BPCA supports the generation of the necessary Technical Bill of Material (TBOM) via automatic test cases and workflow items between test coordinators and business users.

Capabilities of Test Option 1

Test Planning

You can create test plans containing all test cases relevant to your implementation, upgrade project or for other planned changes, based on the Business Blueprint and the assigned test cases. Test cases can be selected automatically for a test plan, if you analyze change impact with the Business Process Change Analyzer. To assign test cases to the tester responsible in the Test Workbench, you create test packages as a subset of a test plan. With the SAP Solution Manager Enterprise Edition, you can also define a workflow, with e-mail notification depending on the test plan status and the sequences of test cases within a test package, in which each test case can be assigned to a tester.

Manual Test Execution

After planning the tests and releasing the test plan, all testers are notified via e-mail about the start of the test. If there is a defined test sequence, a notification is also sent when the test case can be tested. After performing the test, the testers document the results in a test note, set the status, and, in case of error, create a support message in the service desk, which is integrated into the Test Workbench.

Automatic Test Execution

SAP Solution Manager 7.1 features a new Test Automation Framework that allows customers to select the test automation capability. The new framework integrates SAP and third party test automation products via open interfaces. Third party test tool vendors can certify their products for this purpose. The Test Automation Framework includes the following features:

- Integration of design time of third party test tool through certified interfaces, test data planning and assignment of system under test
- Scheduling of automatic tests – also for remote locations
- Integration of status and progress reporting between SAP Solution Manager and third party tools
- Change Impact Analysis and Workflow to trigger repair activities for damaged test cases
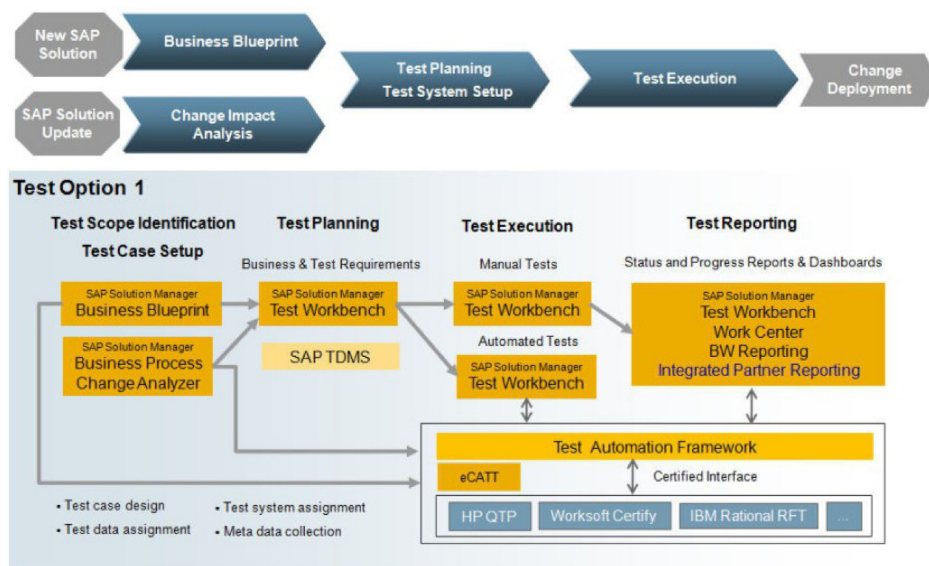

Figure 22: Test Automation Framework with SAP Solution Manager 7.1

Reporting

You can perform reporting on different levels, to get the results and progress of tests.

On project level, you can find out how many test cases:

- have been executed successfully
- have run with errors
- are still in process or not yet tested
- are not assigned to any test package or test plan

Detailed reporting of test status and open support messages can also be done on test plan and test package level.

To document all test activities, and to ensure traceability for external audits, you can also create a test report based on a test plan, with all details such as test case description, test results, test data used, test system information, and so on, in one document.

Capabilities of Test Option 2

SAP Customers can integrate SAP Quality Center by HP and related products, to perform all test-related activities. The following process and product integration is recommended:

- Transfer business blueprint and business requirements from SAP Solution Manager to SAP Quality Center. The business process hierarchy can be used to assign manual and automated tests developed in Quality Center. The integration is provided by the "SAP Solution Manager Adapter for SAP Quality Center by HP".

- Create manual test cases and assign them to test requirements. This functionality is in "SAP Quality Center by HP"

- Generate automatic tests. SAP Test Acceleration and Optimization (SAP TAO) accelerates the generation of automatic tests for SAPGUI-based business processes. For all other types of business processes, use the BPT and QTP modules of the "SAP Quality Center by HP" to build automatic tests.

- Test planning, test execution, defect management and reporting is provided by SAP Quality Center by HP.

- Defects discovered in SAP Quality Center that cannot be resolved by the test team, can be reported back to SAP Solution, and will automatically create a ticket in the integrated SAP Solution Manager Service Desk. The integration is provided by the "SAP Solution Manager Adapter for SAP Quality Center by HP". This returns test results from SAP Quality Center to SAP Solution Manager as well.

Capabilities of Test Option 3

SAP Customers can integrate IBM Rational products to perform all test-related activities. The integration with SAP Solution Manager is provided by the "SAP Solution Manager Connector for IBM Rational". The following integration is featured with SAP Solution Manager 7.1:

- Transfer business blueprint and business requirements from SAP Solution Manager to IBM Rational. The business process hierarchy can be used to assign manual and automatic tests developed in Quality Center. The integration is provided by the "SAP Solution Manager Connector for IBM Rational".

- Requirements management, test planning, creation of manual and automatic tests, test execution, defect management and reporting using IBM Rational products.

- Defects discovered in IBM Rational that cannot be resolved by the test team can be reported back to SAP Solution, and will automatically create a ticket in the integrated SAP Solution Manager Service Desk. The integration is provided by the "SAP Solution Manager Connector for IBM Rational". This returns test results from IBM Rational to SAP Solution Manager as well.

Scope and Effort Analyzer

With the *Scope and Effort Analyzer*, you can analyze the scope of activities and effort before you start the physical deployment of Enhancement Packages (EHP) and Support Packages (SP). The *Scope and Effort Analyzer* provides you with a comprehensive analysis with minimal customer input. All analysis steps of the *Scope and Effort Analyzer* are performed in the background after you have entered the necessary input data. With the *Scope and Effort Analyzer* analysis results, you can determine the change impact on custom code and modifications and estimate the rework effort for custom code and modifications as well as the effort for regression tests of impacted business processes.

See also Maintenance Management [page 76], section *Scope and Effort Analyzer*.

More Information

For more information about integration testing, see SAP Service Marketplace, at ▶ support.sap.com/ solutionmanager ↗ ⟩ *Processes* ⟩.

SAP Solution Manager 7.1
ALM Processes in Detail

6.6 Change Control Management

Comprehensive Change Control Management plays a crucial role in today's distributed environments. With standardized processes, methods and tools, it ensures a high level of transparency and continuous quality in the change processes throughout the entire application lifecycle. Change Control Management coordinates all changes in a software landscape, to ensure that they do not conflict with each other. It also ensures that changes are made without disrupting the ongoing business. This results in improved software landscape quality, a higher availability of IT solutions, and a lower total cost of ownership. Change Control Management ensures that the changes made are transparent and traceable. With it, you receive an overview of methods and tools for managing functional and technical solution changes with the modularity of the change-control functionalities. Standardized processes, methods, and tools ensure high transparency, and continuous quality and flexibility of the change processes during the entire application lifecycle. Change Control Management goes from the technical layer up to the process layer, highlighting the new features in the different change-control areas.
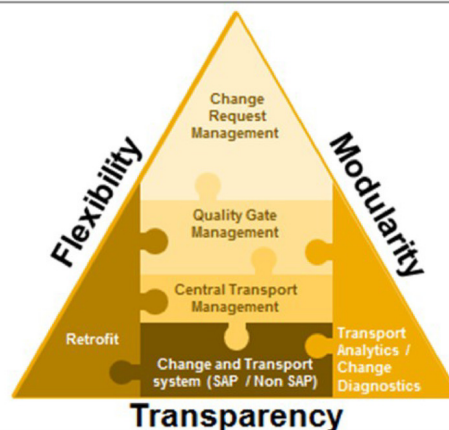

Figure 23: Change and Transport System

Moving developments and changes across a system landscape requires a transport-management system. In response to this need, SAP offers the change and transport system (CTS) tool for ABAP, and an enhanced version, CTS+, for non-ABAP. CTS helps you to organize development projects in the ABAP workbench and in customizing, and then transporting the changes between the SAP systems in your system landscape. With CTS+ you can also transport Java objects (J2EE, JEE) and SAP-specific programs and applications (such as Web Dynpro Java, or SAP NetWeaver Portal), as well as other non-ABAP technologies in your landscape.

CTS+, addresses the following issues:

- Synchronization of imports into double-stack systems
- Transport of portal content
- Central administration interface for all types of transports and systems
- Tracking and management of non-ABAP objects with Change Request Management

CTS+ connects Java systems to the standard CTS. All non-ABAP applications inherit its properties, including documentation, tracking, and troubleshooting features. Furthermore, CTS+ is an open framework that also provides the option to use CTS+ for applications where CTS+ support is not shipped by SAP; i.e., with CTS+ you can also transport non-SAP applications and non-SAP content in your landscape. For details, take a look at the guide *How to Implement CTS+ for Your Application* (scn.sap.com/docs/DOC-16167).

This enables central management of ABAP and non-ABAP objects, including combined transports for mixed objects like ABAP and JAVA. Changes to business process that run in ABAP and JAVA can also now be synchronized.

The CTS and CTS+ are fully compatible with SAP Solution Manager, and can be used in SAP Solution Manager's Quality Gate Management and Change Request Management functionality. In addition to the above mentioned technologies, SAP's most recent topics like SAP HANA, SAP Business Objects, and SAP Mobile Platform are also integrated into CTS and CTS+. Details on the change and transport system can be found on the SAP Community Network SCN:

- CTS: scn.sap.com/docs/DOC-7643
- CTS+: scn.sap.com/docs/DOC-8576

Transport Execution Analysis

The self-service transport execution analysis (TEA) analyzes the transport behavior in a productive system and creates and utilizes indicators for the quality of software changes. It collects data in the development, test, and production system. This data is sent to the SAP Solution Manager and processed by macros into a Microsoft Word document report. The report contains the measured values with evaluations, as well as best-practice recommendations on how the transport behavior can be improved. These recommendations are individually adjusted to the analyzed transport landscape. This enables a technical quality manager to identify improvement areas in the current change processes, and to take corrective actions by changing technical settings or introducing process changes.

The self-service transport execution analysis for projects (TEAP) analyses transport requests proactively before they are imported into a test or production system. It identifies transport-related problems like import or sequence errors before the import is done. It also predicts the import times and identifies problems due to different software versions in the export and import systems. It also provides best-practice recommendations for avoiding these errors. As a result, the import is more robust, and the stability of the production system is improved.

Both self-services are available in the work center SAP Engagement and Service Delivery.

Change Diagnostics

Change-diagnostics capabilities within SAP Solution Manager are comprised of end-to-end change analysis and change reporting and configuration validation, with the configuration and change database as central configuration-item repository.

End-to-end change diagnostics provides many benefits to you. It is the central entry point for analyzing changes in a solution. You can drill down from overviews to detailed lists of changes, using BI methods.

Change analysis also provides additional hints for determining root cause analysis, by supplying the application with data and trends. Change analysis improves analysis results by providing accurate system information, such as configuration parameters or database parameters, including their history. It allows you to understand if detected changes originate from change requests, or if new incidents may be caused by recent changes.

Configuration validation helps you to standardize their solution configuration and improve their security. By controlling the versions of configurations in use, you are able to validate configuration items: if they are configured consistently and in accordance with existing requirements and policies. It supports you in setting up compliance reporting in different areas like security or software versions.

Central Change Transport System (cCTS)

The central change and transport system (cCTS) is the basic infrastructure for Quality Gate Management (QGM) and Change Request Management when it comes to transports. The evolution from CTS to the enhanced CTS (CTS+) for non-ABAP and non-SAP content led to the requirement to manage transports across technology

tracks, which gave the birth to a new central transport foundation layer known as cCTS. It provides essential features like synchronized transports or the basic algorithms for downgrade checks. Integrated into tools like QGM and Change Request Management, cCTS provides a unique transport infrastructure for SAP's process tools and transport administrators. You use it to manage your transport landscapes in your development, test, and productive non-ABAP (like Java, portal, and HANA) systems, and it can link them to your existing ABAP transport landscapes. To manage your projects that involve different development teams working on different systems, the respective systems can be linked together. All development activities relevant for your project are automatically connected, everything can go to production in one step – no one has to remember all the tracks: The tools do this for you.

For the process layer (QGM and Change Request Management) that is based on CTS, the introduction of the new cCTS layer offers a wide array of opportunities and possibilities that were not possible before with regards to flexibility, status-driven change, and transport management. The benefits of the new transport request-based bundling concept even across parallel transport tracks are clear when it comes to flexibility. If some parts of your development have to wait before they can go live, you can retain them, or move them to another project. Even after having released a transport request or a change, you can still move. Downgrade checks will make sure that you do not overwrite newer functionality. You can find a lot of information about what is going on on the transport side inside QGM and Change Request Management, while staying inside your change control tool; and execute what you have to do, and find the information you need.

In addition, you can protect systems with several options that are provided in the infrastructure: you can define locks to stop imports for a certain system, or you can even switch off your local CTS to make sure that imports are only possible through a managed process with approval steps in between. With cCTS you get an enhanced lock management with a free lock definition, project-specific locks, and the avoidance of CTS tunneling, in case a process tool is used on the customer side.

Retrofit – Dual Landscape Synchronization

When doing larger implementation or upgrade projects, SAP recommends using a dual- or phased-system landscape, to better differentiate between maintenance developments and new implementations.

A dual-system landscape consists of a regular system landscape (e.g., 3 tier), and an additional project or implementation landscape (e.g., 2 tier). All maintenance activities can be done without any disruption through the implementation projects, which might be touching a lot of objects that are frequently used in the productive environment and that have a big demand for maintenance. On the other side, all the implementation efforts are independent of the maintenance activities, making it easy to change the existing implementation and develop new functionality, without endangering the productive landscape.

However, by using such a landscape, all changes in the maintenance landscape must be manually reimplemented in the development landscape. This means additional manual effort. In addition, if the retrofit process is not supported by a tool, there is a high risk that it will not be done completely. This leads to missing synchronization between the maintenance and development landscape, and causes problems during the later cutover and go live.

The retrofit tool in SAP Solution Manager automatically captures all changes in the maintenance landscape and transfers them into the development landscape.

Quality Gate Management

Quality Gate Management (QGM) is an out-of-the-box solution that ensures consistent and synchronized transports of ABAP and non-ABAP changes throughout the system landscape.

QGM provides an integrated and consistent quality process for all operational units, across the various organizations of your company. It ensures full control and transparency of all software change processes.

A major benefit of SAP Solution Manager's Quality Gate Management functionality is fast access to a project, and a status overview of the various change projects. It provides a central administration interface for all types of

transports and system landscapes. QGM integrates the various development workbenches into a central transport and change control system.

With Quality Gate Management, you can benefit from SAP's transport best practices, to reduce the amount of transport requests, and the number of versions in your productive system. To mitigate the risk of downgrades and inconsistencies in your productive systems, QGM provides downgrade protection checks through the entire change process. These checks monitor the object changes, and the export and the import process.

Further benefits are the synchronized distribution of software in different software stacks, synchronized changes to business processes that run in ABAP and non-ABAP (with ECTS), and the control of the software change quality by defining quality gates.

With the introduction of the newly developed central change & transport infrastructure (cCTS), you can benefit from unprecedented flexibility. Transport requests can be assigned, or decoupled from or to a development project or between projects, independent of the status (modifiable/released) and the current stage. The underlying cCTS infrastructure also provides the possibility to assign and integrate external transport requests (external SID) into your change process.

The combination of flexibility and risk mitigation will help you to react faster at any time on their business requirements, and can guarantee a better quality for the changed business processes.

Change Request Management

Change Request Management is a flexible tool that helps you check developments and changes to your entire system landscape centrally in SAP Solution Manager: this includes changes to SAP-related systems, as well as changes to any other kind of IT equipment. Change Request Management offers a range of functions and benefits, and you can use it to establish a central and tool-supported change-management process in your company.

The concept on which the processes of Change Request Management are based consists of two types of documents: the change request and the change transaction. The change request is the initial document in which the requirement or change to be made is documented and described for the first time. It also documents the approval or approval procedure of the request. As soon as you have approved a change request, one or more change transactions are generated as follow-on documents, with direct reference to the original request. Change transactions distinguish between different types of changes. The type depends on whether a change is a change to a system or an IT component, and the urgency of the change. In the change transaction, you can document and execute all activities that are necessary for making this change.

You can see at any time where an actual change originated, who approved it, who implemented it, and who imported it into the production system. One of the main benefits of this transparency is that all this information is available through a central point – SAP Solution Manager – where you can access it at any time.

You can use the Change Request Management functions to manage releases and projects in a number of ways. Within a given project, you can plan any changes that are to be implemented over a certain period, and monitor their implementation. You can also efficiently document and resolve changes that are not part of a project plan, but call for swift attention (*urgent changes*), for instance, if an error occurs that could jeopardize a production environment.

Another option for managing releases using Change Request Management is the integration with SAP PPM, the SAP project-planning and management tool. Your organization can record and plan all the changes that need to be implemented in an *SAP PPM* project plan as "tasks" that can then be integrated into the actual change documents from SAP Solution Manager's Change Request Management. You can plan resources and also establish a connection to the back end, for example, to the *cross-application time sheet* (CATS) component for recording working times. The project plan is integrated in the project in SAP Solution Manager, which passes through several phases in what is known as a *project cycle*. The project cycle represents the release, and its phases are controlled centrally from SAP Solution Manager.

In this regard, SAP Solution Manager closes a gap that exists in many change management solutions: When databases or lists, for example, are used to depict change management processes and log change requests and

approvals, manual intervention becomes absolutely necessary when a transport request needs to be created or imported. The transport-request number has to be copied to the database by hand, which is a potential source of errors. A typo or mistake when copying invalidates the entire process. With Change Request Management, transport requests are generated centrally from SAP Solution Manager. A reference to the corresponding change request is created automatically (with the ID and description copied to the transport request's name), enabling a clear relationship to be identified at any time. The Change Request Management scenario lets you track all transports relating to a specific project, enabling you to check where they were created and into which systems they have been imported. From SAP Solution Manager, you can navigate to the transport logs and import queue, as well as to the SAP Solution Manager maintenance project, the project plan, and the connected systems. Each change transaction provides an overview of all transports and transport tasks created for it. From there, you can monitor the status of transports at any time, and also branch directly into the log file.

With the introduction of the newly developed central change & transport infrastructure (cCTS), customers can benefit from unprecedented flexibility. Transport requests can now be assigned or decoupled from or to a change document, independent of the status (modifiable/released) and the current stage. The underlying cCTS infrastructure also provides the possibility to assign and integrate external transport requests (external SID) into your change process.

The combination of flexibility and risk mitigation will help you to react more quickly at any time on their business requirements, and can guarantee a better quality for the changed business processes.

However, you can also record changes in Change Request Management that do not require a transport connection. As with all other changes, you produce a change request that goes through all the approval steps, and you document the required steps in the change request itself. With this, SAP Solution Manager advances SAP's vision of application management and IT governance by providing you with indispensable functions for implementing and running solutions transparently. This forms the basis for many statutory requirements: It supplies answers to the question of who did what when, and who checked and approved the measures.

For an organization to run a system landscape smoothly in the face of constantly changing requirements, it must take into account the following aspects:

- Change requests, whether resulting from error messages, or from idea-management processes, must be classified and approved centrally.

- When a request has been approved, reliable procedures must be followed to apply the change, transport it to follow-on systems (quality assurance and production), and conduct tests. These procedures should be complemented by meticulous documentation containing all change-related information, and data on all persons involved in the process.

- The status of a change request must be traceable at all times.

Equally important is the integration of people within the organization, whereby SAP Solution Manager's focus on processes is instrumental in enabling communication between business departments and IT administrators. Everyone involved in implementing a change can always access all the relevant information, such as requirements, specifications, documentation, test cases, test results, and status analyses. This information is organized using the business-process hierarchy in SAP Solution Manager, and stored centrally.

This offering from SAP is designed in line with the processes in the *IT Infrastructure Library* (ITIL). The ITIL defines the objective of change management as ensuring that changes are made economically and promptly, with minimum risk. Change Request Management includes the processes *Change Request Management*, *project management,* and *change logistics*.

In addition, Change Request Management enables your company to use these processes in a very easy way by offering predefined processes. It also helps you meet audit requirements, for example, for Sarbanes Oxley Act (SOX). It does so by forcing all users to make the changes centrally using the defined change-management processes in SAP Solution Manager.

A major advantage of Change Request Management is that standard processes and functions are supplied, and they can be used quickly.

SAP Solution Manager is supplied with preconfigured workflows for the change request and change execution (change transactions). These workflows are based on SAP's experience with change and transport management, and influenced by numerous customer projects. The following change types are predefined:

- Normal change

    Normal changes refer to requests for regular system-maintenance activities, such as requests for support packages or SAP Notes to be imported.

- Defect correction

    An *defect correction* reports errors discovered during testing and reported to the development team. The developer can then also correct the error at a later date using this document, even though it is not possible to create a new normal change during the test phase.

- Urgent change

    An *urgent change* enables you to react quickly and flexibly if a malfunction threatens to disrupt the operation of your solution. This enables you to import changes from urgent changes into production systems before importing the normal change in the *go-live* phase of the maintenance cycle.

- Administrative change

    An *administration change* concerns changes that do not require transporting, such as changes to number ranges.

- General change

    A *general change* concerns changes that do not require a transport connection and that are not related to an SAP or IT system, for example, changes to IT components like printers or mobile devices.

To make it possible to get started with Change Request Management quickly and smoothly, SAP also provides a range of predefined roles and authorization profiles. These roles and processes can initially be used to create a feasibility report using Change Request Management. Later on, they can serve as the basis for adjusting Change Request Management to the individual requirements or change-management processes of your company.

To summarize: Change request management offers the following benefits:

- Comprehensible documentation of planned and implemented changes and their consequences
- Complete coverage from change request to technical transports
- Consistent documentation of all change requests
- Improved efficiency of change-management projects
- Workflow support
- Reduced workload for IT specialists
- Minimized business disruptions
- Enhanced transparency of your solution
- Effective and efficient change-management processes
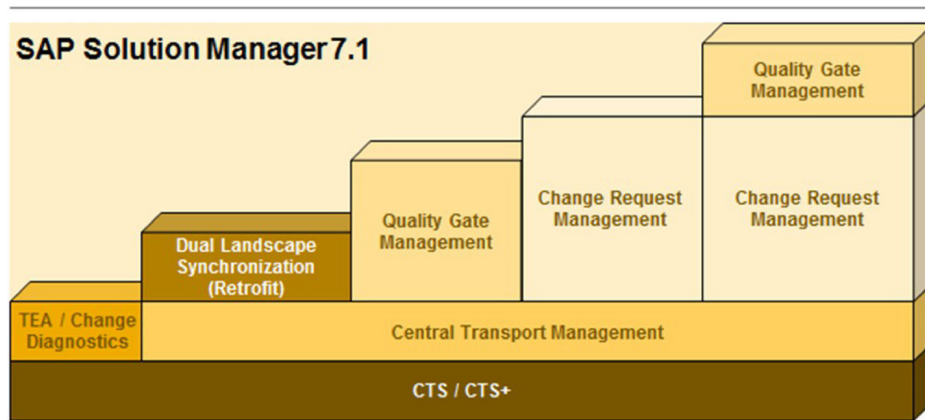- Higher quality of change

Figure 24: Change Control Management Cominations Options

More Information

For more information about Change Control Management, see SAP Service Marketplace, at ▶ support.sap.com/solutionmanager ↪ ▶ *Support Programs & Services* ▶ *Methodologies* ▶.

6.7 Application Incident Management

Incidents during mission-critical applications can cause severe business loss if they are not properly managed, their root cause identified, and their effects minimized by immediate corrective action. The incident management standard defines the process and tools to manage the collaboration required between the parties involved, to resolve incidents quickly.

When a disruption occurs that prevents end users from performing their tasks in the IT solution, the end user has to describe and prioritize the incident in a ticket. In SAP solutions, this can be done directly in the application. Context data is automatically attached, and the ticket is sent to the SAP Solution Manager service desk.

Key users provide first level support. They search for an existing solution in the customer solution sources and in the SAP Notes database. If the first level support cannot resolve the incident, the ticket is forwarded to the customer's IT support organization.

IT support performs an end-to-end root cause analysis, to identify the root cause. If necessary, other parts of the customer IT organization take over, to resolve the incident. If the customer IT organization cannot resolve the incident, it forwards the ticket for in-depth analysis, to SAP or to the provider of a third-party application that caused the incident. The status of the incident is transparent at all times.

Incidents can also be assigned to composite problem messages. Problem Management allows you to further investigate the cause of the incident, which may have already been fixed. Another use case for Problem Management is to collect multiple incidents in one problem, because all incidents have the same cause, so one solution can be proposed for all incidents assigned.

The SAP Solution Manager service desk is SAP's tool to manage incidents efficiently across the customer business unit, customer IT, SAP, and SAP partners whose applications are integrated in the customer solution. In addition, the service desk has an open bidirectional interface to send and receive incidents to and from other

ticket systems. This might be required if a part of customer IT has been outsourced or out-tasked to service providers who use their own help desk.

Various people and roles are involved in the incident management process flow. There are the creators of a support message, end users working in a managed system, and key users creating messages for end users.

There are also the message processors in application management, supported by other groups in the IT organization. Depending on the number of levels of the support organization, these groups of people may consist of employees with different levels of expertise.

One of the major benefits of using SAP Solution Manager Application Incident Management is the integration into SAP Support Backbone, to report customer incidents to SAP and receive remote support from SAP experts, through the SAP Solution Manager.

Incident Management is also integrated into other Application Lifecycle Management processes in SAP Solution Manager, such as managing test errors in Test Management, managing alerts in Business Process Monitoring, or using Change Control processes as follow-up activities to an incident.

Incident Management use cases

- SAP Collaboration with IT Service Desk (-> Key User)

  The scenario is mainly used for the end user to report to the key user, and to forward incident messages to SAP support. It enables all resolution mechanisms provided by SAP Support. The configuration effort is minimal.

- IT Service Management with SAP Solution Manager (-> Customer IT Support)

  Holistic IT Service Management for SAP and beyond SAP solutions (with additional license), with Incident, Problem & Change Management processes, according to ITIL recommendations.

- Application Incident Management for SAP-centric solutions (-> SAP CCoE)

  SAP Solution Manager Service Desk is used as the SAP Expert Application Incident Management tool in second-level support. The primary tool for all IT incidents could be a third-party Help Desk.

- Application Incident Management for Service Provider (-> Hoster)

  Service Desk is the central Application Incident Management platform for service providers who handle the incidents of multiple customers.

- ALM integration with Service Desk (-> Customers ALM)

  Service Desk is used in several ALM capabilities in SAP Solution Manager, wherever a message flow-based resolution process is to be established. It is integrated into Test Management, BP Operations, Project Blueprint, Change Request Management, and Technical Alerting.
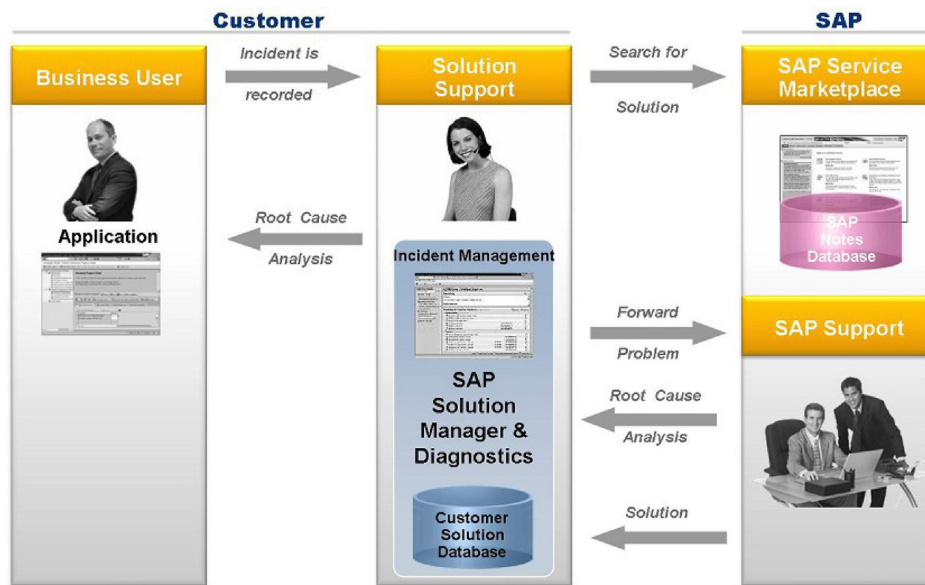
Figure 25: Incident Management Process

6.8   Application Operations

Application Operations comprises all capabilities for monitoring, alerting, analysis, and administration of SAP solutions, and reducing customer TCO with predefined content and centralized tools for all aspects of SAP Solution Manager operations. It provides end-to-end reporting functionality, either out-of-the-box, or created individually by customers.
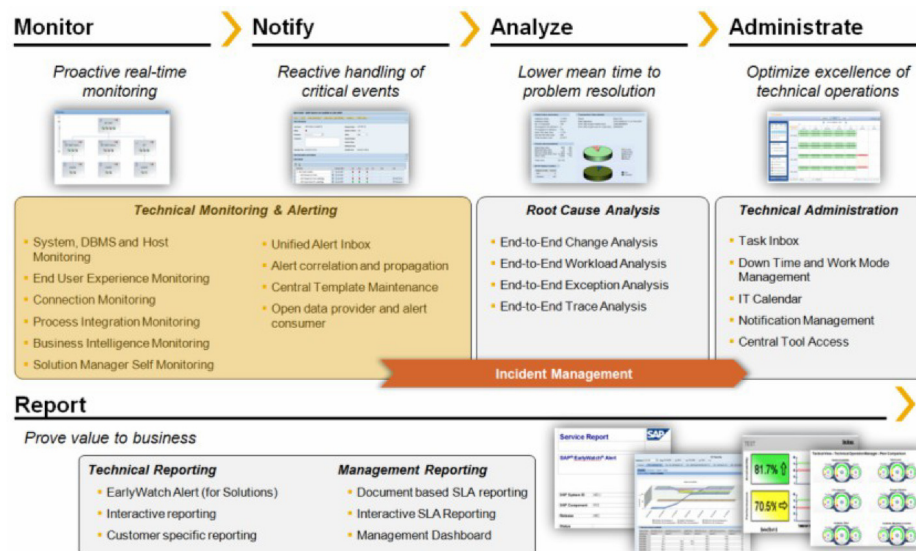

Figure 26: Application Operations

Technical Monitoring & Alerting

The central monitoring and alerting capabilities in SAP Solution Manager are the foundation for reliable and stable operation of complex heterogeneous system landscapes. Central configuration capabilities, in conjunction with

system landscape-aware predefined monitoring templates, significantly reduce the TCO for the setup and operation of the monitoring landscape. One major challenge is the avoidance of alert flooding. This is achieved by an intelligent alert calculation engine that supports event correlation, summarization and propagation, across all monitored objects. The following capabilities are available:

- **System, Database and Host Monitoring** for all SAP technologies, databases and operating systems supported (including virtualisation data)
- **End User Experience Monitoring** includes the monitoring of performance and availability from an end user perspective, with synthetic probes
- **SAP NetWeaver PI Monitoring** is a specialized monitoring application in SAP Solution Manager, for SAP NetWeaver PI systems
- **SAP NetWeaver Business Intelligence** Monitoring is a specialized monitoring application for SAP BI (SAP NetWeaver BW and SAP BusinessObjects XI)
- **Connection Monitoring** ensures that connections between SAP systems are reliable and efficient
- **Solution Manager Self-Monitoring** comprises the monitoring of the SAP Solution Manager, and all infrastructure components needed, such as CA Introscope Enterprise Manager, Diagnostics Agents, and SAP NetWeaver BW

Technical Monitoring & Alerting offers the following benefits:

- Reduced TCO by central maintenance and distribution of preconfigured content templates from SAP, that can be further changed and extended by the customer.
- Avoid alert flooding by using propagation and correlation capabilities
- One open infrastructure for all SAP technologies
- Central Alert Inbox with personalization and filter capabilities
- Open data consumer interface, to allow integration into service desk, notification management and auto-reaction methods
- Alert correlation and propagation to create meaningful alerts from simple events, and avoid alert flooding
- Integration in existing SAP Solution Manager processes such as Incident Management, Notification Management (SMS and eMail), Root Cause Analysis, Downtime Management and Technical Reporting

Root Cause Analysis

In today's complex solutions, with multiple technology stacks, locating the root cause of an incident requires a systematic top-down approach. End-to-end root cause analysis gives you all the tools and the methodology, needed to perform cross-component root cause analysis, and component-specific root cause analysis by experts. End-to-end root cause analysis in SAP Solution Manager is based on a central diagnostics database that is filled by the Diagnostics Agent running on each managed system. They continuously collect exceptions (such as critical log entries, dumps, and queue errors), configuration snapshots, and workload data, including operating system and database statistics, from each managed system. The information is kept across all stacks, and is available from a central console in SAP Solution Manager.

End-to-end diagnostics can support root cause analysis for components implemented in ABAP, Java, C(++), or that run on the Microsoft .NET framework. End-to-end root cause analysis in SAP Solution Manager standardizes and systematically aggregates the following:

- Performance and resource metrics
- Access to technical configuration
- Exceptions, such as logs and dumps (program terminations)
- Traces (recording the activity of a single user or process)
- Tracking changes to software (code), configuration, or content

The cross-component diagnostics application (**End-to-End Workload**, **End-to-End Change**, **End-to-End Trace** and **End-to-End Exception Analysis**) and component-specific diagnostics tools can be accessed centrally from SAP Solution Manager, via the Root Cause Analysis work center. These tools can be run from any SAP workplace, when customers open an SAP connection, allowing customers and partners to use the same standardized SAP tools, such as primary support and development support. SAP Solution Manager's standard role assignment gives SAP employees read-only access to diagnostic data in SAP Solution Manager and the managed systems.

The major tool is the unique End-to-End Trace capability, to isolate single user requests throughout complete landscapes, and identify component causing the problem. This tool can locate the component that took the most time in a long-running request, which spawns multiple systems running on multiple technology stacks.

More Information

For more information about root cause analysis, see wiki.sdn.sap.com/wiki/display/TechOps/RCA_Home (more documentation on diagnostics and root cause analysis), and the help center in the Root Cause Analysis work center.

Technical Administration

Technical Administration comprises tools and capabilities to support the Technical Management and IT operations management teams in the efficient planning, implementation, execution, and reporting of the day-to-day operational activities. Cross-landscape tools and central access to tools on the managed systems, are available in SAP Solution Manager, tools on the managed system are provided by SAP NetWeaver. As a result, the systems are stable and run efficiently.

You can use the Technical Administration work center to plan, to document your operational tasks (e.g. daily tasks, downtime management) and perform routine and corrective measures to keep systems in good condition, such as database management, job management, print and output management, user management, etc.

Technical Analytics

Technical Analytics in SAP Solution Manager is the access point to two groups of reports:

- Technical Reporting, focusing on technical KPIs
- Management Reporting, with data aggregated from the technical reporting for either SLA or dashboard reporting (Integrated in CIO dashboards)

Both groups contain multiple subtypes of reports:

- **Document-based service reporting**, such as SAP EarlyWatch Alert (for solutions), and **Service Level Reporting** (SLR). The content of these reports is mostly predefined, although some parts can be individually tailored.
- **Interactive reporting**, which includes the **BW-based** standard IT reports and customer-specific BW reports, or management dashboards based on Xcelsius, can be used
    - to get an aggregated overview of system behavior over time
    - to visualize trends in various categories
    - to provide KPIs for stakeholders of IT departments (prerequisites for SLRs)
    - for real time monitoring of compliance with agreed service levels
    - to observe and adjust alert thresholds
    - to monitor systems and applications
    - to monitor and adjust capacity of systems, hosts and databases
    - to optimize internal processes and IT department setups (e.g. alert reporting, unused RFC destinations)

Different data sources are used, depending on the reporting flavors:

- Monitoring Data
- Statistical Data
- CA Introscope Enterprise Manager Data
- BPM Data
- CCMS Data
- SDCCN Data

The main benefits are:

- One source of truth for all metrics based on SAP Business Warehouse, including flexible data retrieval and aggregation capabilities
- Holistic technical reporting for different technologies, such as ABAP, Java, .NET or native components
- Unified and self-contained data model which allows attaching context information, such as system landscape, business process and/or interface information, to data
- Common data retrieval mechanism based on Extractor FWK, provided by SAP Solution Manager, to monitor and control resource consumption in managing and managed systems
- Generic and open data browsing capability, based on SAP BW, for different data consumers, such as EarlyWatch Alert, Service Level Reporting, Standard Reporting, or Customer-Specific Reporting

6.9 Business Process Operations

Business Process Operations deals with business-critical processes. A disruption of business processes can cause serious financial loss, and is to be avoided. Business Process Operations contains four topics to help you to manage your data flow, to ensure seamless business operation.
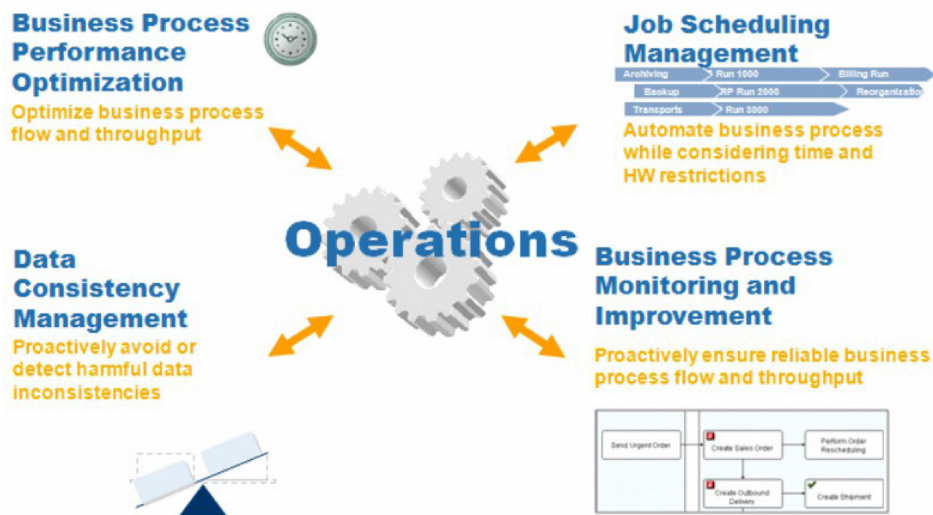
Figure 27: The four components of Business Process Operations

Requirements and Constraints:

A solution landscape, containing several systems, should exist or be planned before you can use this process. This can already be planned during the implementation phase, but is only realized when the installation is finished.

- Business Process & Interface Monitoring

This topic manages mission-critical business processes, and defines processes and procedures to manage exceptions and error situations during daily business operations. Business Process & Interface Monitoring describes best practices for monitoring and supervision of the mission-critical business processes, including critical interfaces, as part of Data Consistency Management. The goal is to detect problems as early as possible, and solve them as quickly as possible, before they become critical for the business. It includes the following capabilities:

- Business Process Monitoring
- Solution Directory
- Service Desk
- BW Trend Analysis
- Service Level Reporting

- Job Scheduling Management

Job Scheduling Management schedules jobs, for reasons of time constraints and resource limitations. In a productive solution landscape, online and background activities are required, as well as maintenance and administration tasks. Job scheduling reduces costs, manpower requirements, and resource usage, and improves timing by automation. Resource use can be optimized with load balancing. It includes the following capabilities:

- Job Documentation
- Service Desk
- Change Request Management
- Business Process Monitoring
- Integration with SAP Central Process
- Scheduling by Redwood
- BW Trend Analysis
- Job Scheduling Health Check

- Data Consistency Management

Data Consistency Management ensures correct and up-to-date data at all times. As business decisions are based on this data, data inconsistencies can lead to increased costs, and business processes that include inconsistent data can lead to downtime of your solution, until the root cause is identified and the data is corrected. You can protect your daily business operations by preventing and detecting data inconsistencies, as early as possible, using defined error handling procedures. It includes the following capabilities:

- Data Consistency and Interface Monitoring
- Service Desk Integration
- Guided procedures for data consistency
- Investigations, including central access to data
- Consistency tools
- Best Practices for Data Consistency Management
- Business Continuity Management and Emergency Recovery
- Service Level Reporting Data Consistency Check Reports
- Solution Documentation Integration BW Trend Analysis for Alerts

- Business Process Performance Optimization (BPPO)

The SAP Business Process Performance Optimization service analyzes and optimizes business processes by transactional performance. The BPPO is applicable during the test phases of an implementation/upgrade

project, and during the operation phase of the SAP solution. If one or more of the following issues apply, the SAP Business Process Performance Optimization service will assist you:

- Long response times of some business process steps (SAP standard and customer-specific)
- Deadlines and time windows for some processes cannot be met
- High system resource consumption during some processes or times
- Performance problems with transactions (which normally perform well) while a specified process is running.

6.10 Maintenance Management

Software has to be maintained regularly, to ensure the smooth and reliable operation of a solution. This includes major updates, corrective packages (such as support packages or SAP notes), software patches (such as kernel and database patches), and enhancement packages (EHPs) to activate new functionality without an upgrade.

Maintenance Management covers all those activities and provides comprehensive support for all your maintenance activities. The central function for this task is Maintenance Optimizer in SAP Solution Manager. It determines the maintenance files needed for your SAP solution, and provides a powerful tool for the automatic calculation of required maintenance files (delta calculation for the selected system), with an easy-to-use guided procedure for all maintenance activities.

Maintenance Optimizer supports the whole software maintenance process, from planning the maintenance, selecting the system to maintain, selecting the maintenance type, calculating the files needed for maintenance, downloading these files and passing them to the relevant upgrade tools (such as EHPI, SPAM/SAINT, JUp, etc.) This controlled and highly-automated process ensures consistent maintenance of your system landscape, and comprehensive documentation of all your maintenance activities, inside SAP Solution Manager.

For more information, see the *Maintenance Planning Guide for SAP Solution Manager* at wiki.scn.sap.com/wiki/ display/SM/Maintenance+Optimizer .

Maintenance Management further contains the following components:

- System Recommendations eases the handling of SAP notes by providing a tailored recommendation of the notes which should be applied to a selected managed system. This recommendation is based on the actual "notes status" of this system, and is divided into the categories Security-relevant notes, Performance notes, HotNews, Legal change notes and Correction notes (for ABAP and Java).
- The side-effect report lists all available corrections related to a support package, and can download corrections directly
- The note assistant implements SAP notes, and provides comprehensive reporting, project administration and logging capabilities for all SAP note-related activities
- The maintenance certificate ensures that only systems with a valid maintenance contract can receive software maintenance. It is required for all systems based on SAP R/3 4.6C and newer. The distribution of the maintenance certificate can be automated, so there is no further effort required on your part, after the initial setup.

Scope and Effort Analyzer

With the *Scope and Effort Analyzer*, you can analyze the scope of activities and effort before you start the physical deployment of Enhancement Packages (EHP) and Support Packages (SP). The *Scope and Effort Analyzer* provides you with a comprehensive analysis with minimal customer input. All analysis steps of the *Scope and Effort Analyzer* are performed in the background after you have entered the necessary input data. With the *Scope and Effort Analyzer* analysis results, you can determine the change impact on custom code and modifications and

estimate the rework effort for custom code and modifications as well as the effort for regression tests of impacted business processes.

6.11   Upgrade Management

Customers want to have access to the latest application and technology features, to facilitate technical solutions for increasingly complex business challenges, so they want to upgrade their SAP solutions to the latest SAP product versions.

The first step in an upgrade project is to specify the sequence of activities. The SAP Upgrade Road Map in SAP Solution Manager is the starting point for this. For every step, the relevance and impact are highlighted, to help to decide the level of attention to be paid to it in an upgrade.

SAP Solution Manager provides:

- Access to the SAP Upgrade Road Map. As the central guide for the entire project team, the SAP Upgrade Road Map provides SAP's latest upgrade methodologies, to plan and execute an SAP upgrade project. It bundles SAP's latest knowledge and best practices on project management and on the functional and technical aspects of upgrading an SAP system landscape.

- Proven tools, which ease the management and execution of your upgrade project. This includes documentation of all project-related information, configuration support, testing, e-learning management and a support desk. For more information, see Solution Implementation [page 55]. You can also perform a first high-level impact analysis of the planned upgrades on other logical components in the SAP solution landscape, with the Upgrade Dependency Analyzer, which has been fully integrated into SAP Solution Manager.

- Most SAP systems contain not only standard software, but also a substantial number of custom-developed objects for the given company's own needs. The custom development management cockpit (CDMC) provides a comprehensive set of functions for customer-specific development optimization tasks.

  - Clearing analysis (CA): Clearing analysis identifies and analyzes obsolete repository objects. The results of a clearing analysis project are the starting point for the clearing process for custom development.

  - Upgrade/change impact analysis (UCIA): The upgrade/change impact analysis analyzes the technical impact of an SAP upgrade or support package on your custom developments, and estimate the amount of work required to adapt them.

  - Change and Transport System Analysis (CTS): The Change and Transport System Analysis performs quality checks by usage analysis, environment analysis and remote comparison, of the objects specified under the requests in the Analysis (QAS/Test) systems, and evaluates the result.

6.12   Custom Code Management

We support you in the management and optimization of your custom code and the individual enhancements to your SAP standard solutions. We provide numerous tools that you can use effectively as part of the Custom Code Management application-lifecycle management process. Using these tools, you can analyze the usage of specific custom code and enhancements in your systems, and thus have a complete overview of your custom developments. Based on the results of an analysis, you can identify the custom developments that are actually used, and structure and control them better using the functions provided by SAP Solution Manager. The main objective is to improve your technical system implementation, while reducing the quantity and potential impact of

enhancements on other objects. This helps you achieve sustainable operation- and maintenance-cost reductions of your SAP system landscape.

The main Custom Code Management capabilities are:

Engineering Services (ESRV) Custom Code Management Roadmap

Efficient Custom Code Management not only ensures the quality and scalability of the business scenarios supported by your custom code, but it can also reduce your overall total cost of ownership (TCO). Among the other maintenance-relevant topics, a comprehensive approach to Custom Code Management optimization is offered by the Engineering Services (ESRV) Custom Code Management Roadmap. This methodology – along with the optimization of the existing custom code (as-is situation) – optimizes the Custom Code Management processes, to ensure the highest functional quality supported by custom code at a very early stage (to-be situation).

Custom Code Lifecycle Management

Custom code lifecycle management (CCLM) was developed to accompany your ABAP enhancements and new developments throughout their entire lifecycle. This cycle begins when you create an object (program, transaction, table, class, etc.), continues through its usage in production systems, and extends to the retirement of the object in case of disuse or a reorientation of the development.

The heart of the application is a generic, flexible library model with which you can classify and manage custom-code objects developed by your organization. Information about the usage of these objects, their quality, and version history in the connected systems can also be collected. For this, you have a central application that provides a complete overview of your custom code, as well as recording the code's behavior in a complex landscape without any additional manual effort.

The generic central library is used by SAP as the central data source for all information on custom objects. You benefit from the ability to individually assign responsibilities and contracts, consolidate developments within an organization, and control new developments. It is possible to assign any object or list of objects to a contract or other predefined attributes.

Custom-Development Management Cockpit

SAP Solution Manager provides a tool that shows you overall impact of lifecycle change events, such as the implementation of a support package and upgrades or any other code-related event, on your custom-developed solutions. The custom-development management cockpit helps you throughout all of the phases of the application management lifecycle, by increasing the upgradeability of your custom-developed solutions and by providing support as you adopt the changes. The cockpit can simplify the custom-development environment by identifying obsolete or unused objects or modifications, thereby helping you to decrease total cost of operations using the clearing-analysis functionality. It also provides you with greater control over changes and the impact of an upgrade through upgrade/change impact analysis.

Custom Code Applications (Formerly SAP Clonefinder)

SAP offers the custom-code app tool, which can help you resolve the fundamental custom code problems. This supports diverse use cases, such as clone finding, modification tracking, dynamic interface-analysis determination, obsolete-reference detection, service-pack stack impact, cross-system code comparison including versioning, and top-20 analysis. Without SAP Solution Manager, these tools can be executed in any SAP system, to ensure seamless transparency. Elements of these analyses are included as self-collection data providers in the CCLM.

Usage and Procedure logging

Usage and procedure logging (UPL) is a new usage-tracking functionality available in any ABAP-based system directly integrated in the SAP kernel. It is used to log all called and executed ABAP procedures and units, like

programs, function modules down to classes, methods, and also subroutines. The logging information is controlled, managed, and centrally stored in the SAP Solution Manager, and is fully integrated in the CCLM.

SAP Code Inspector

The SAP Code Inspector is a tool for checking the performance, security, and syntax of your repository objects, as well as their adherence to naming conventions. The tool provides you with information messages, warning messages, or error messages specific to different properties of the objects examined, along with a recommendation. It is also fully integrated in the CCLM.

The ABAP Test Cockpit

The ABAP Test Cockpit is a new ABAP-check toolset that allows you to run static checks and unit tests for your ABAP programs. In order to ensure a smooth migration and comparable check results throughout your company, the ABAP Test Cockpit is compatible with the SAP Code Inspector. This means you can reuse your checks and variants in the ABAP Test Cockpit. It is also fully integrated in the CCLM.

Custom Code Management Dashboards

Custom Code Management dashboards are used for managing and reviewing the custom-code developed for your company. It contains five apps for monitoring custom code and displaying the data in dashboard form. The following apps can be displayed in the CCM dashboard: usage, quantity, quality, severity, and criticality.

7 Useful Links and SAP Notes

The links and SAP Notes listed in the following subsections provide additional general information about SAP Solution Manager and other SAP solutions.

7.1 Useful Links

The following table lists useful links on SAP Service Marketplace or SAP Community Network, in addition to those in the section.

Table 8

Content	Location on SAP Service Marketplace or SAP Community Network
Information about creating error messages	service.sap.com/message
SAP Software Distribution Center (software download and ordering software)	support.sap.com/swdc
SAP Online Knowledge Products (OKPs) – phase-based Learning Maps	service.sap.com/rkt
SAP Solution Manager adapter for SAP Quality Center by HP	support.sap.com/solutionmanager
Process Scheduling adapter for SAP Solution Manager	
SAP Productivity Pak by RWD adapter for SAP Solution Manager	
How-to documents (recommendations on how to use functions, including examples)	support.sap.com/solutionmanager > *Knowledge Transfer* > *How-To Documents*
SAP Community Network	scn.sap.com
Information on SAP GUI	scn.sap.com/community/gui
System Landscape Directory	scn.sap.com/docs/DOC-8042
Software Lifecycle Manager	scn.sap.com/community/it-management/alm/software-logistics
SAP Interactive Forms by Adobe	scn.sap.com/community/interactive-forms-by-adobe
SAP NetWeaver Business Warehouse	scn.sap.com/community/data-warehousing
Documentation for System Landscape Management – LMDB	scn.sap.com/docs/DOC-29495
Maintenance Planning Guide	wiki.scn.sap.com/wiki/display/SM/Maintenance+Optimizer

7.2 Useful SAP Notes

The following table lists useful SAP Notes, in addition to those in the SAP Notes [page 14] section.

Table 9

SAP Note Number	SAP Note Title
394616	Release strategy for SAP Solution Manager (ST)
566225	Report to delete the basis notifications with deletion flag
939897	SAP Solution Manager usage data
1109650	SAP Solution Manager extension add-ons
1244713	Configuration of Custom Development Management Cockpit
1274747	Installing SAP Productivity Pak by RWD adapter
1472465	SAP Solution Manager 7.1 – System Landscape Setup Guide
1478974	Diagnostics in SAP Solution Manager 7.1
1577909	Supplements to SAP Solution Manager 7.1
1763697	Component Based Test Automation: Installation Information

8 Questionnaire

SAP Solution Manager Implementation Planning Check

The following questionnaire helps you to collect all the relevant data for your implementation.

Table 10

Systems to be managed	-
<SID 1>	SAP Component (for example SAP NetWeaver Portal): <Product Name> Production Status: Prod/Dev/QA/Test System ID (SID): <System ID> Instance Number: <Instance Number> Installation Number: <Installation Number> SP Stack: <SP Stack> DB: <DB System + Version> OS: <Release + Version>
<SID 2>	SAP Component (for example SAP NetWeaver Portal): <Product Name> Production Status: Prod/Dev/QA/Test System ID (SID): <System ID> Instance Number: <Instance Number> Installation Number: <Installation Number> SP Stack: <SP Stack> DB: <DB System + Version> OS: <Release + Version>

Status (General Information)

What status has your monitored landscape?

- PROD
- DEV
- QAS
- TEST

Is your SAP Solution Manager system setup on Unicode?

- YES (recommended)
- NO

Which system landscape do you have for SAP Solution Manager?

- One (productive only)
- Two (at least recommended)
- Three

Sizing

Which processes do you plan to use with SAP Solution Manager?

- Change Request Management
- Change Control
- Incident Management
- Solution Monitoring
- Implementation of SAP Solutions
- Upgrade of SAP Solutions
- SAP Engagement and Service Delivery
- Root Cause Analysis
- System Monitoring
- Test Management

How many users will use which feature?

How many **physical** machines are going to be managed in your landscape?

- 1-50
- < 100
- < 500
- > 500

Did you perform sizing for your implementation?

- Yes
- No

Application

Does your SAP Solution Manager system fulfill the prerequisites in SAP Note 1010428 (End-to-End Diagnostics)?

- Yes
- No

Do your managed systems fulfill the prerequisites in SAP Note 1010428 (End-to-End Diagnostics)?

- Yes
- No

Which SAP products are you planning to manage with root cause analysis?

Are you planning to implement root cause analysis in an existing SAP Solution Manager system?

- Yes
- No

If so, what is the support package level of this SAP Solution Manager system?

Do you plan to set up a high availability scenario for your SAP Solution Manager implementation?

- Yes
- No

According to the sizing: Which type of CA Introscope Enterprise Manager setup do you need for your implementation?

- Only 1 Collector Enterprise Managers (EMs)

- Multiple Collector Enterprise Managers (EMs)
- Manager of Managing (MOM)

Do you plan to install BW on a system **other** than SAP Solution Manager?

- Yes
- No (recommended)

Are you using a central user administration environment for your SAP Solution Manager system and your managed systems?

- Yes
- No

If you plan the implementation in a central user administration environment, did you request all required users, as described in the security guide (▐▶ service.sap.com/instguides ✎ 〉 *SAP Components* 〉 *SAP Solution Manager* 〉 *<current release>* ◖)?

- Yes
- No

Infrastructure

Provide a high-level overview of your SLD strategy.

Is your managed landscape already registered in a central SLD?

- Yes (recommended)
- No

If not, do you plan to set up a central SLD for the connected systems?

- Yes (recommended)
- No

Is your managed landscape separated from your SAP Solution Manager instance by a firewall?

- Yes
- No

If so: Are all necessary ports opened, according to the security guide (▐▶ service.sap.com/instguides ✎ 〉 *SAP Components* 〉 *SAP Solution Manager* 〉 *<current release>* ◖)?

- Yes
- No

Agents

Do you already have a system based on the SAP NetWeaver 7.0 SR3?

- Yes
- No

If so: Are the agents connected to your central SLD?

- Yes (recommended)
- No

How do you plan to install the agent for the managed systems?

- Manually, interactive
- Manually, silent mode
- Automated deployment (recommended)

Have you installed your managed systems using virtual hosts?

- Yes

- No

Have you installed an SAP Host Agent on all physical hosts?

- Yes

- No

Implementation process

Depending on the system type of your managed system, a restart may be necessary to activate all changes made during the setup or the connection of a managed system. (For more information, see Implementation Sequence [page 10].)

Did you include this restart in your maintenance planning?

- Yes

- No

In case of incidents or missing components: Will it be possible to implement SAP Notes and patches during productive time (for SAP Solution Manager)?

- Yes

- No

Are the systems connected to SAP Service Marketplace?

- Yes

- No

A   Reference

A.1   The Main SAP Documentation Types

The following is an overview of the **most important** documentation types that you need in the various phases in the life cycle of SAP software.

Cross-Phase Documentation

SAPterm is SAP's terminology database. It contains SAP-specific vocabulary in over 30 languages, as well as many glossary entries in English and German.

- Target group:
    - ○ Relevant for all target groups
- Current version:
    - ○ On SAP Help Portal at ▶ help.sap.com ↝ ▶ *Glossary* ▌
    - ○ In the SAP system in transaction `STERM`

SAP Library is a collection of documentation for SAP software covering functions and processes.

- Target group:
    - ○ Consultants
    - ○ System administrators
    - ○ Project teams for implementations or upgrades
- Current version:
    - ○ On SAP Help Portal at help.sap.com ↝ (also available as documentation DVD)

The **security guide** describes the settings for a medium security level and offers suggestions for raising security levels. A collective security guide is available for SAP NetWeaver. This document contains general guidelines and suggestions. SAP applications have a security guide of their own.

- Target group:
    - ○ System administrators
    - ○ Technology consultants
    - ○ Solution consultants
- Current version:
    - ○ On SAP Service Marketplace at service.sap.com/securityguide ↗

Implementation

The **master guide** is the starting point for implementing an SAP solution. It lists the required installable units for each business or IT scenario. It provides scenario-specific descriptions of preparation, execution, and follow-up of an implementation. It also provides references to other documents, such as installation guides, the technical infrastructure guide and SAP Notes.

- Target group:
    - ○ Technology consultants

- Project teams for implementations
- Current version:
  - On SAP Service Marketplace at service.sap.com/instguides ↗

The **installation guide** describes the technical implementation of an installable unit, taking into account the combinations of operating systems and databases. It does not describe any business-related configuration.

- Target group:
  - Technology consultants
  - Project teams for implementations
- Current version:
  - On SAP Service Marketplace at service.sap.com/instguides ↗

Configuration Documentation in SAP Solution Manager – SAP Solution Manager is a life-cycle platform. One of its main functions is the configuration of business scenarios, business processes, and implementable steps. It contains Customizing activities, transactions, and so on, as well as documentation.

- Target group:
  - Technology consultants
  - Solution consultants
  - Project teams for implementations
- Current version:
  - In SAP Solution Manager

The **Implementation Guide (IMG)** is a tool for configuring (Customizing) a single SAP system. The Customizing activities and their documentation are structured from a functional perspective. (In order to configure a whole system landscape from a process-oriented perspective, SAP Solution Manager, which refers to the relevant Customizing activities in the individual SAP systems, is used.)

- Target group:
  - Solution consultants
  - Project teams for implementations or upgrades
- Current version:
  - In the SAP menu of the SAP system under ▶ *Tools* ❭ *Customizing* ❭ *IMG* ❭

Production Operation

The **technical operations manual** is the starting point for operating a system that runs on SAP NetWeaver, and precedes the application operations guides of SAP Business Suite. The manual refers users to the tools and documentation that are needed to carry out various tasks, such as monitoring, backup/restore, master data maintenance, transports, and tests.

- Target group:
  - System administrators
- Current version:
  - On SAP Service Marketplace at service.sap.com/instguides ↗

The **application operations guide** is used for operating an SAP application once all tasks in the technical operations manual have been completed. It refers users to the tools and documentation that are needed to carry out the various operations-related tasks.

- Target group:
  - System administrators

- Technology consultants
- Solution consultants
- Current version:
  - On SAP Service Marketplace at service.sap.com/instguides ↗

Upgrade

The **upgrade master guide** is the starting point for upgrading the business scenarios and processes of an SAP solution. It provides scenario-specific descriptions of preparation, execution, and follow-up of an upgrade. It also refers to other documents, such as upgrade guides and SAP Notes.

- Target group:
  - Technology consultants
  - Project teams for upgrades
- Current version:
  - On SAP Service Marketplace at service.sap.com/instguides ↗

The **upgrade guide** describes the technical upgrade of an installable unit, taking into account the combinations of operating systems and databases. It does not describe any business-related configuration.

- Target group:
  - Technology consultants
  - Project teams for upgrades
- Current version:
  - On SAP Service Marketplace at service.sap.com/instguides ↗

Release notes are documents that contain short descriptions of new features in a particular release or changes to existing features since the previous release. Release notes about ABAP developments are the technical prerequisite for generating delta and upgrade Customizing in the Implementation Guide (IMG).

- Target group:
  - Consultants
  - Project teams for upgrades
- Current version:
  - On SAP Service Marketplace at service.sap.com/releasenotes ↗
  - In the SAP menu of the SAP system under ❘▶ *Help* ❭ *Release Notes* ❭ (only ABAP developments)

Typographic Conventions

Table 11

Example	Description
\<Example\>	Angle brackets indicate that you replace these words or characters with appropriate entries to make entries in the system, for example, "Enter your **\<User Name\>**".
▶ *Example* ❭ *Example* ❭	Arrows separating the parts of a navigation path, for example, menu options
Example	Emphasized words or expressions
Example	Words or characters that you enter in the system exactly as they appear in the documentation
www.sap.com↗	Textual cross-references to an internet address
/example	Quicklinks added to the internet address of a homepage to enable quick access to specific content on the Web
123456↗	Hyperlink to an SAP Note, for example, SAP Note 123456↗
Example	• Words or characters quoted from the screen. These include field labels, screen titles, pushbutton labels, menu names, and menu options. • Cross-references to other documentation or published works
`Example`	• Output on the screen following a user action, for example, messages • Source code or syntax quoted directly from a program • File and directory names and their paths, names of variables and parameters, and names of installation, upgrade, and database tools
`EXAMPLE`	Technical names of system objects. These include report names, program names, transaction codes, database table names, and key concepts of a programming language when they are surrounded by body text, for example, `SELECT` and `INCLUDE`
`EXAMPLE`	Keys on the keyboard

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