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

Table 1:

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
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<tr>
<td>SAP Solution Manager 7.2 SPS 1; version 1.00</td>
<td>2015-12-11</td>
<td>Initial version</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note that the implementation of SAP Note 1750162 is a precondition for a correct indexing in SAP Solution Manager. See also section SAP Notes [page 7].</td>
</tr>
<tr>
<td>SAP Solution Manager 7.2 SPS 1; version 1.01</td>
<td>2016-12-17</td>
<td>Minor corrections</td>
</tr>
<tr>
<td>SAP Solution Manager 7.2 SPS 1, version 1.10</td>
<td>2016-02-01</td>
<td>Corrected <a href="http://support.sap.com/usagerights">http://support.sap.com/usagerights</a> link, minor corrections</td>
</tr>
<tr>
<td>SAP Solution Manager 7.2 SPS 2, version 1.20</td>
<td>2016-04-07</td>
<td>Sizing information changed</td>
</tr>
<tr>
<td>SAP Solution Manager 7.2 SPS 2, version 1.25</td>
<td>2016-04-22</td>
<td>Sizing information updated</td>
</tr>
<tr>
<td>SAP Solution Manager 7.2 SPS 3, version 2</td>
<td>2016-08-15</td>
<td>TREX installation step added to Implementation section.</td>
</tr>
<tr>
<td>SAP Solution Manager 7.2 SPS 3, version 2.01</td>
<td>2016-08-23</td>
<td>Minor changes</td>
</tr>
<tr>
<td>SAP Solution Manager 7.2 SPS 3, version 2.1</td>
<td>2016-09-20</td>
<td>CA Introscope Enterprise Manager version corrected. The version relevant for SAP Solution Manager 7.2 SP03 is 9.7 SP01 or higher.</td>
</tr>
<tr>
<td>SAP Solution Manager 7.2 SPS 3, version 2.2</td>
<td>2016-10-06</td>
<td>Minor correction</td>
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<tr>
<td>SAP Solution Manager 7.2 SPS 3, version 2.3</td>
<td>2016-11-03</td>
<td>SAP LoadRunner not relevant for SAP Solution Manager 7.2 anymore. Information removed.</td>
</tr>
</tbody>
</table>
1 Introduction

Use

Usage Rights for SAP Solution Manager Enterprise Edition

The extent to which you can use the software SAP Solution Manager 7.2 depends upon the type of maintenance contract you have.

You are authorized to use the full functional scope of the software package, without any restrictions, if you have a contract for:

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

If you have an SAP Standard Support contract, you can install this software package, but you are only allowed to use the functions indicated in the SAP Solution Manager usage rights at http://www.support.sap.com/usagerights.

This master guide is a central starting point for the technical implementation of SAP Solution Manager 7.2 (hereafter SAP Solution Manager). SAP Solution Manager 7.2 comprises the SAP Solution Manager Enterprise Edition, which is activated automatically.

Note

Make sure that you have the latest version of the master guide, by checking SAP Service Marketplace before installation. The master guide is regularly updated on SAP Service Marketplace at https://service.sap.com/instguides SAP Components SAP Solution Manager Release 7.2 Planning.

SAP Solution Manager supports heterogeneous system environments. Its functions cover all aspects of implementation, deployment, operation, and continuous improvement of solutions. As a centralized, robust 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 in a solution, including project teams, SAP partners, consulting and SAP Active Global Support.

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

2.1 Introduction

SAP Solution Manager radically reduces the total cost of ownership (TCO) and risk for your IT organization. With SAP Solution Manager, you explore the value and scope of establishing a single source of truth for SAP solutions within your company.

The general sequence for the implementation of an SAP Solution Manager system is as follows:

1. You plan the implementation (such as scope, hardware and software requirements, release restrictions).
2. You plan the system landscape for your use cases.
3. You install the components of your SAP Solution Manager system.
4. You configure your system.
5. You set up the connection to the managed systems.

In the following, you find information about the planning steps for SAP Solution Manager 7.2.

2.2 Before You Start

2.2.1 Introduction

This master guide provides an overview of the documents and information that you need to install, upgrade, and configure SAP Solution Manager. It also provides technical information about the software units and the processes of the SAP Solution Manager.

Note

The SAP Solution Manager guides, for example, the security guides, are available on SAP Service Marketplace, at [http://service.sap.com/instguides](http://service.sap.com/instguides). You should use the documents available there. The guides are updated regularly.

2.2.2 SAP Notes

Read the SAP Notes mentioned in this master guide, they are relevant to SAP Solution Manager implementation. The following notes have also to be implemented.
Table 2:

<table>
<thead>
<tr>
<th>SAP Note Number</th>
<th>SAP Note Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>2087917</td>
<td>SAP Solution Manager 7.20 SP1 – Basic Functions</td>
</tr>
<tr>
<td>2138636</td>
<td>SAP Solution Manager 7.20 SP2 – Basic Functions</td>
</tr>
<tr>
<td>2225070</td>
<td>SAP Solution Manager 7.20 SP3 – Basic Functions</td>
</tr>
<tr>
<td>1750162</td>
<td>PHIos are not found by Full Text Search Engine (TREX)</td>
</tr>
<tr>
<td>2027133</td>
<td>No authorization for function module RFC_READ_TABLE</td>
</tr>
<tr>
<td>2165805</td>
<td>BPCNW: Impossible to run package twice if prompt contains large member selection</td>
</tr>
<tr>
<td>2169149</td>
<td>Solution Manager 7.20 document management SAP_BASIS corrections</td>
</tr>
<tr>
<td>2154957</td>
<td>Unified Rendering for SAP_UI 740</td>
</tr>
</tbody>
</table>

Planning information

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

Useful SAP Notes

Relevant SAP Notes are listed at the end of this document (see Useful SAP Notes [page 87]). They contain the latest information about installation, and corrections to the installation documentation.

![Note]

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

2.2.3 More Information

Use

For more information about planning topics not covered in this guide, see the following content, for example on SAP Support Portal, SAP Community Network, or in SAP Help Portal.
Table 3:

<table>
<thead>
<tr>
<th>Content</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Help on application usage for SAP Solution Manager</td>
<td><a href="http://help.sap.com/solutionmanager">http://help.sap.com/solutionmanager</a></td>
</tr>
</tbody>
</table>
| Latest information on installation and upgrade of SAP Solution Manager, its configuration, operation, and security | http://service.sap.com/instguides  
SAP Components  
SAP Solution Manager  
Release 7.2 |
| Information about implementation and operation of SAP Solution Manager processes and functions | http://support.sap.com/ekt-solutionmanager                                 |
| General information about SAP Solution Manager                          | http://support.sap.com/solutionmanager                                     |
| Released platforms and technology-related topics, such as maintenance strategies and language support | http://scn.sap.com/community/database  
To access the Product Availability Matrix directly, enter  
http://support.sap.com/pam |
| High availability                                                       | http://www.sdn.sap.com/irj/SDN/ha                                         |
| Performance                                                             | http://service.sap.com/performance                                         |
| Information about support package stacks, latest software versions and patch level requirements | http://support.sap.com/sp-stacks                                           |
| Information about Unicode technology                                     | http://scn.sap.com/community/internationalization-and-unicode            |
| SAP Solution Manager Setup Wiki                                         | http://wiki.scn.sap.com/wiki/display/SMSETUP                              |

More Information

For further useful links, see Section Useful Links [page 86].

2.2.4 Accessing the SAP Library

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

Select the required release and 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.

## 2.3 Implementation Sequence

### Planning the Implementation of the SAP Solution Manager System Landscape

Perform the following steps:

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
</table>
| 1    | Plan the implementation of the SAP Solution Manager system landscape | See the following information:  
  - Planning Your System Landscape [page 17]  
  - Reference System Landscapes [page 38]  
  - System Landscape Directory (SLD) Strategy section in Interoperability of Central SAP Solution Manager Systems [page 30]  
  - Installing SAP Solution Manager section in this chapter  
| 2    | Plan hardware prerequisites for SAP Solution Manager 7.2 | See Sizing Your SAP Solution Manager [page 26]. |
| 3    | Plan installation 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 30]. |
| 4    | Plan installation of TREX (if you do not use SAP HANA as a database) | See [SAP NetWeaver Search and Classification (TREX) - Installation & Implementation Documentation Center](http://service.sap.com/instguides). |
Step | Description | Details |
--- | --- | --- |
7 | Plan restart of managed systems | Necessary for the Java system (CA Introscope Enterprise Manager bite-code agent activation). |
9 | Plan core and expert competency training for operators and end users of SAP Solution Manager | See SAP Enterprise Support Academy at [https://support.sap.com/esacademy](https://support.sap.com/esacademy) for Expert Guided Implementation sessions. |

### Installing SAP Solution Manager

Install SAP Solution Manager 7.2 as follows:

1. Plan the ABAP system installation with the maintenance planner.
2. Install the SAP Solution Manager 7.2 ABAP system with the software provisioning manager (SWPM) and the resulting stack.xml file.
3. Install the SAP Solution Manager 7.2 Java system using the latest SWPM on the Solution Manager Java DVD.
4. Connect the systems.

For more information about the installation process, see [http://service.sap.com/instguides](http://service.sap.com/instguides) SAP Components > SAP Solution Manager > Release 7.2 > 2 Installation > System Provisioning for SAP Solution Manager 7.2.

The SAP Solution Manager installation steps are listed in the following table. For more information about how to perform them, 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 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 [https://support.sap.com/supportstandards](https://support.sap.com/supportstandards).

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Details</th>
<th>Relevant Processes</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Check hardware prerequisites for SAP Solution Manager 7.2.</td>
<td>See Sizing Your SAP Solution Manager [page 26].</td>
<td>All</td>
<td>AP, TEC, IT</td>
</tr>
<tr>
<td>Step</td>
<td>Description</td>
<td>Details</td>
<td>Relevant Processes</td>
<td>Role</td>
</tr>
<tr>
<td>------</td>
<td>---------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------</td>
<td>------</td>
</tr>
<tr>
<td>2</td>
<td>Install SAP Solution Manager 7.2 ABAP system</td>
<td>For the ABAP system, see the guides for SAP systems based on the application server ABAP of SAP NetWeaver 7.1 and higher at <a href="http://service.sap.com/sitoolset">http://service.sap.com/sitoolset</a> Software Logistics Toolset 1.0 Documentation System Provisioning Installation: Systems Based on SAP NetWeaver 7.1 and Higher</td>
<td>All</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Install SAP Solution Manager 7.2 Java system</td>
<td>For the Java system, use the guides for SAP systems based on the application server Java of SAP NetWeaver 7.1 and higher at <a href="http://service.sap.com/sitoolset">http://service.sap.com/sitoolset</a> Software Logistics Toolset 1.0 Documentation System Provisioning Installation: Systems Based on SAP NetWeaver 7.1 and Higher</td>
<td>All</td>
<td>TEC, IT</td>
</tr>
<tr>
<td>4</td>
<td>Install SAP Library – Online Documentation SAP Solution Manager 7.2</td>
<td>See the Installation Guide - SAP Library Installation and Update on Unix/Windows - For SAP systems based on SAP NetWeaver 7.4 at <a href="http://service.sap.com/instguides">http://service.sap.com/instguides</a> SAP Library</td>
<td>All</td>
<td>AP, TEC, IT</td>
</tr>
<tr>
<td>5</td>
<td>Connect all managed systems to SLD</td>
<td>See the SLD guides on the SAP Community Network, at <a href="https://www.sdn.sap.com/irj/sdn/nw-sld">https://www.sdn.sap.com/irj/sdn/nw-sld</a>. Update the content of SLD to the latest model and content version, see note 669669.</td>
<td>All</td>
<td>TEC, IT</td>
</tr>
<tr>
<td>7</td>
<td>Implement missing software required on managed systems</td>
<td>See Usage Types [page 23] on Plug-ins and SAP Note 2248724 (Root Cause Analysis in SAP Solution Manager 7.2).</td>
<td>Root cause analysis</td>
<td>AP, TEC, IT</td>
</tr>
<tr>
<td>8</td>
<td>Install Diagnostics agent on CA Introscope Enterprise Manager host</td>
<td>See the CA Introscope Enterprise Manager Strategy section in Interoperability of Central SAP Solution Manager Systems [page 30].</td>
<td>Root cause analysis</td>
<td>TEC, IT</td>
</tr>
<tr>
<td>9</td>
<td>Prepare System</td>
<td>Automatic Preparation of the SAP Solution Manager System [SOLMAN_SETUP] System Preparation.</td>
<td>All</td>
<td>TEC, IT</td>
</tr>
</tbody>
</table>
Configuring SAP Solution Manager

When you have installed the software components described above, you can perform the configuration centrally (depending on your requirements), from the managing system (with the exception of the agent installation and the post-configuration activity, which both require OS access). The following table describes the configuration steps, and where to find more information about each of them.

Table 6:

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Details</th>
<th>Access to Operating System Required</th>
<th>Relevant Processes</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mandatory configuration in SAP Solution Manager</td>
<td>Perform the Mandatory Configuration step in SAP Solution Manager Configuration. For more information, see the guided procedure of this step.</td>
<td>No</td>
<td>All</td>
<td>AP, TEC</td>
</tr>
<tr>
<td>2</td>
<td>Set up managed system</td>
<td>Perform the Managed Systems Configuration step in SAP Solution Manager Configuration. For more information, see the guided procedure of this step.</td>
<td>Yes</td>
<td>All</td>
<td>TEC</td>
</tr>
</tbody>
</table>

**Note**

For the content activation of the Solution Documentation, there are the following additional minimal requirements:

- ST-PI 2008_1_700: SP 0008
- SAP Note 2127305
- SAP Note 1994934
- SAP Note 2083831

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Details</th>
<th>Access to Operating System Required</th>
<th>Relevant Processes</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Configure the SAP Solution Manager processes</td>
<td>Configure the SAP Solution Manager processes, depending on your business processes.</td>
<td>No</td>
<td>All</td>
<td>AP, TEC, IT</td>
</tr>
<tr>
<td>4</td>
<td>Restart SAP Solution Manager and the managed systems</td>
<td>This is necessary for the Java system (CA Introscope Enterprise Manager byte-code agent activation).</td>
<td>No</td>
<td>All</td>
<td>TEC</td>
</tr>
<tr>
<td>5</td>
<td>Check the implementation</td>
<td>Perform the Managed Systems Configuration step in SAP Solution Manager Configuration.</td>
<td>No</td>
<td>All</td>
<td>AP, TEC</td>
</tr>
</tbody>
</table>

More Information

- For more information, see the Configuration Guide SAP Solution Manager 7.2 at http://service.sap.com/instguides SAP Components SAP Solution Manager Release 7.2
• For more information about new releases, delta upgrades, and support packages, see the *SAP Software Download Center* on SAP Support Portal, at [https://support.sap.com/swdc](https://support.sap.com/swdc).
3 Planning the Upgrade to SAP Solution Manager

3.1 Introduction

Note
SAP Solution Manager now consists of an ABAP system and a Java system and is no longer a dual-stack system.

If you do not use SAP HANA as a database, you need to install TREX.

To set up a new SAP Solution Manager system, refer to Chapter Planning the Implementation of SAP Solution Manager [page 7].

3.2 Upgrade to SAP Solution Manager 7.2

Use

The upgrade from SAP Solution Manager 7.1 to SAP Solution Manager 7.2 comprises two main steps. The main step, preparation, is carried out in SAP Solution Manager 7.1. The other step, the actual upgrade, is carried out in SAP Solution Manager 7.2, including the dual-stack split (for information about the dual-stack split of systems based on SAP NetWeaver 7.1 and higher, see http://service.sap.com/sltoolset Documentation System Provisioning).

Note
For information about upgrade preparations, the actual upgrade, and activities necessary after the upgrade, see SAP Note 2227300 (Further Upgrade Information for SAP Solution Manager 7.2). This SAP Note is updated regularly.

Before you start your upgrade, see the Release Information Note 2328482 for information about recommended corrections.

The upgrade to SAP Solution Manager 7.2 is synchronized with the Software Update Manager (SUM) that connects the procedures for your ABAP system and your Java system. For information about the tool and about how to perform the synchronized upgrade, refer to the SAP Solution Manager 7.2 information on SAP Service Marketplace, at http://service.sap.com/instguides SAP Components SAP Solution Manager Release 7.2 Upgrade Update of SAP Systems Using Software Update Manager.
Caution

Create a backup before performing any upgrade activities. For more information, see the update guide Update of SAP Systems Using Software Update Manager on SAP Service Marketplace, at https://service.sap.com/instguides > SAP Components > SAP Solution Manager > Release 7.2 > 5 Upgrade > Update of SAP Systems Using Software Update Manager.

More Information

For more information on planning topics, relevant SAP notes and how to access the SAP Library, refer to chapters SAP Notes [page 7], More Information [page 8] and Accessing the SAP Library [page 9] respectively.
4 System Landscape

4.1 Introduction

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

4.2 Planning Your System Landscape

4.2.1 Introduction

SAP Solution Manager Technical Overview

Before considering SAP recommendations for the SAP Solution Manager system landscape, it is necessary to get a technical overview of the SAP Solution Manager platform itself. SAP Solution Manager is an integrated lifecycle management solution, based on an ABAP system and a Java 7.4 system. The ABAP system should be Unicode. Additionally-installed components include those for root cause analysis, such as CA Introscope Enterprise Manager, the browser plug-in, agents for managed systems, the SAP Router and FTP server.

Implementation

Construction of the SAP Solution Manager system is based on the standard Software Provisioning Manager (SWPM). The systems have 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. You can install it as a separate instance on existing hardware. After installation, further configuration is required. You execute the configuration settings in a guided procedure of the SOLMAN_SETUP transaction. To connect the managed systems to SAP Solution Manager, you need to execute some additional setup steps in this guided procedure. If you want to use the diagnostics capabilities for your managed systems, see SAP Note 1472465 (Diagnostics – Setup of Managed Systems).

4.2.2 Landscape Recommendation

SAP customers often ask whether they will need one, two or three systems in the SAP Solution Manager landscape. This section addresses the pros and cons of each landscape scenario.
The following diagram shows the three options.

Figure 1: 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.
In this constellation, development, testing and production operations all run in parallel in one system. The advantage of this is mainly in the reduction of hardware and support costs, and that existing hardware can be used, but it does involve some serious problems and risks. With all activities occurring in one system, all customizing and development is done in the production system, and 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, and there is a high risk of conflicts.
Two-System Landscape

The two-system landscape constellation overcomes 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 of 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
- A limited number of concurrent users on the DEV/QA system
Three-System Landscape

In this constellation, 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 constellation 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 lifecycle management activities, and so meets this criterion. 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 constellation is higher infrastructure and administration costs.

**Note**

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

This section gives 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 product instances, standalone engines, and clients) are required for these processes.
3. Determine your system landscape by deciding how many systems you require and how you want to use each of them. You should use three-system landscape for mission-critical processes.
4. Together with your hardware partner and technical consultant, map the required systems and stand-alone 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, http://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. Some managed systems should also be connected to the quality Solution Manager or development Solution Manager, for testing purposes.

4.2.3 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.

Topology Recommendations

When you run SAP Solution Manager, you gather data from your landscape using one or more SLD systems, enriching this data in the landscape management database (LMDB). With the maintenance planner offered as a service in SAP Support Portal, it is now mandatory for the planning of landscape changes to upload system data.
Therefore, you need to plan the topology of SLD, SAP Solution Manager, and the connection to the customer data in the customer profile: How many SLD and Solution Manager systems do you need and how can the system data be distributed?

For more information, see the following:


4.2.4 Operating System Recommendation

SAP Solution Manager runs on a 64-bit system only.

4.2.5 Unicode

We recommend running SAP Solution Manager on Unicode (for more information, see SAP Service Marketplace, at [http://service.sap.com/unicode](http://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.

4.2.6 Product Instances

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

4.2.7 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 [https://www.sdn.sap.com/irj/sdn/ha](https://www.sdn.sap.com/irj/sdn/ha).
4.2.8 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 HTML**
  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.


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

to be removed, possibly:

SAP Solution Manager does not support the HTML version of SAP NetWeaver Business Client.

For more information, see SAP Developer Network, at http://www.sdn.sap.com/irj/sdn/nw-businessclient.

Browser

SAP Solution Manager follows SAP’s overall web browser strategy for desktop and mobile applications.

4.2.9 Archiving Strategy

Use

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

- 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.

**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 [http://help.sap.com](http://help.sap.com) Technology Platform.

**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, system and application 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 87].

**4.2.10 Sizing Your SAP Solution Manager System**

One of the key issues that you must address for your SAP Solution Manager system, at an early stage, and throughout the product lifecycle, is the system resources required. The sizing of your hardware is a precondition for good performance. Sizing is the determination of the hardware requirements of 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 system needs to be able to handle peak loads, and to behave predictably, as it is your key solution.
lifecycle management platform. For sizing and performance, the database and application layers (services, for example dialog, update, and 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.

To size your SAP Solution Manager system, proceed as follows, depending on your situation:

**Installation from Scratch**

If this is your very first installation of SAP Solution Manager, that is, you have not run SAP Solution Manager before, neither the 7.0 release nor the 7.1 release, use SAP Quick Sizer at [http://service.sap.com/quicksizer](http://service.sap.com/quicksizer). For more information on initial sizing, see [http://service.sap.com/~sapidb/011000358700000519272005E#SAP_Solution_Manager](http://service.sap.com/~sapidb/011000358700000519272005E#SAP_Solution_Manager).

**Upgrade to SAP Solution Manager 7.2**

If you are upgrading from Solution Manager 7.1 or 7.0 (in the following we will only refer to 7.1 for the sake of simplicity) to Solution Manager 7.2, refer to the information provided by the sizing decision tree at [http://service.sap.com/quicksizer Sizing Decision Tree](http://service.sap.com/quicksizer Sizing Decision Tree). In addition, use the following decision matrix:

**Table 7:**

<table>
<thead>
<tr>
<th>Significantly higher/lower usage levels in 7.2 than in 7.1 (users or transactions)</th>
<th>Significantly more/less SAP Solution Manager functions to be used in 7.2</th>
<th>Upgrade to 7.2 includes transition to SAP HANA environment</th>
<th>Case to follow (see information below)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Case 0</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Case 1</td>
</tr>
<tr>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Case 2</td>
</tr>
<tr>
<td>No</td>
<td>NO</td>
<td>Yes</td>
<td>Case 3</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Case 4</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Case 5</td>
</tr>
<tr>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Case 6</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Case 7</td>
</tr>
</tbody>
</table>

When we refer to 7.1 system size or system dimensions, **we mean the portion of your 7.1 hardware that has actually been utilized during system operations**. For example, if your CPU is only used to half its capacity in 7.1, then the 7.1 reference CPU is your full 7.1 CPU capacity divided by 2.
<table>
<thead>
<tr>
<th>Case</th>
<th>What to do</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Case 0</strong></td>
<td>Multiply the utilized dimensions of your 7.1 system with a safety upgrade factor of 1.2 for memory, disk, and CPU, respectively. In addition, size your CPU for a 65% target usage level by multiplying the CPU capacity used up in 7.1 with an overall factor of 1.8 (resulting from 1.2 / 0.65 = 1.8).</td>
</tr>
<tr>
<td><strong>Case 1</strong></td>
<td>Multiply by the upgrade factors as explained in case 0, and multiply the resulting sizing dimensions with linear up-scale (or down-scale) factors. <strong>Example:</strong> If you used to have 100 users in 7.1 and you will have 200 users in 7.2, the up-scale factor is 200/100 = 2.0.</td>
</tr>
<tr>
<td><strong>Case 2</strong></td>
<td>1. Apply the procedure explained in case 0 to calculate the intermediate sizing values. 2. Start SAP Quick Sizer. Take into account your new functional scope. In the New System/System Extension area, select SAP Business Solution/Software Component Extensions to ignore offsets as they are already covered by your existing system size. 3. Correct the intermediate sizing values by the results of the SAP Quick Sizer run. To do this, add or subtract the resources calculated by SAP Quick Sizer to or from the intermediate sizing.</td>
</tr>
<tr>
<td>Case</td>
<td>You are upgrading from Solution Manager 7.1 to Solution Manager 7.2. ...</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------------------------------</td>
</tr>
</tbody>
</table>
| Case 3 | • Without significant changes, that is, the number of 7.1 users and transactions processed will roughly stay the same in 7.2  
• Without changing the functional scope, that is, you will use exactly the same Solution Manager applications in 7.1 and in 7.2  
• You move from a 7.1 non-SAP HANA environment to a 7.2 SAP HANA environment | 1. Apply the procedure explained in case 0 to calculate the intermediate sizing values.  
2. Use the intermediate sizing values as the basis for applying SAP Note [1793345](https://support.sap.com/1793345) and/or SAP Note [1872170](https://support.sap.com/1872170) to cover the transition to SAP HANA. |
| Case 4 | • With significant changes in the intensity of use due to a higher number of users or transaction input than in 7.1  
• You change the functional scope, that is, you will be using more or fewer applications in 7.2 than you did in 7.1  
• You do not move to an SAP HANA environment, for example from 7.1 non-SAP HANA to 7.2 SAP HANA | 1. Apply the procedure explained in case 1 to calculate the intermediate sizing values.  
2. Start SAP Quick Sizer. Take into account your new functional scope. In the New System/System Extension area, select SAP Business Solution/Software Component Extensions to ignore offsets as they are already covered by your existing system size.  
3. Correct the intermediate sizing values by the results of the SAP Quick Sizer run. To do this, add or subtract the resources calculated by SAP Quick Sizer to or from the intermediate sizing. |
| Case 5 | • With significant changes in the intensity of use due to a higher number of users or transaction input than in 7.1  
• Without changing the functional scope, that is, you will use exactly the same Solution Manager applications in 7.1 and in 7.2  
• You move from a 7.1 non-SAP HANA environment to a 7.2 SAP HANA environment | 1. Apply the procedure explained in case 1 to calculate the intermediate sizing values.  
2. Use the intermediate sizing values as the basis for applying SAP Note [1793345](https://support.sap.com/1793345) and/or SAP Note [1872170](https://support.sap.com/1872170) to cover the transition to SAP HANA. |
<table>
<thead>
<tr>
<th>Case</th>
<th>You are upgrading from Solution Manager 7.1 to Solution Manager 7.2, ...</th>
<th>What to do</th>
</tr>
</thead>
</table>
| Case 6 | ● Without significant changes, that is, the number of 7.1 users and transactions processed will roughly stay the same in 7.2  
● You change the functional scope, that is, you will be using more or fewer applications in 7.2 than you did in 7.1  
● You move from a 7.1 non-SAP HANA environment to a 7.2 SAP HANA environment | 1. Apply the procedure explained in case 2 to calculate the intermediate sizing values.  
2. Use the intermediate sizing values as the basis for applying SAP Note 1793345 and/or SAP Note 1872170 to cover the transition to SAP HANA. |
| Case 7 | ● With significant changes in the intensity of use due to a higher number of users or transaction input than in 7.1  
● You change the functional scope, that is, you will be using more or fewer applications in 7.2 than you did in 7.1  
● You move from a 7.1 non-SAP HANA environment to a 7.2 SAP HANA environment | 1. Apply the procedure explained in case 4 to calculate the intermediate sizing values.  
2. Use the intermediate sizing values as the basis for applying SAP Note 1793345 and/or SAP Note 1872170 to cover the transition to SAP HANA. |

### 4.3 Interoperability of Central SAP Solution Manager Systems

SAP Solution Manager interacts with many other SAP systems and components to provide lifecycle 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 lifecycle 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) administers Java-based systems. You can access it from the Technical Administration application 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 product-instance-specific enhancements. For SAP Composition Environment (SAP CE), it contains functionality to administer service-oriented applications, and manage service-oriented architectures in SAP Process Integration 7.10. NWA will be continuously enhanced, and replaces the SAP Visual Administrator.

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.

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), which gathers system data from the landscape and hands it over to its client applications and SAP Solution Manager, and the Landscape Management Database (LMDB), which works on that landscape data to enable monitoring, maintenance, and so on.

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 a central, remote 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 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 86].

- **LMDB**
  The data from the SLD is replicated into the SAP Solution Manager Landscape Management Database (LMDB). The LMDB is a central, built-in repository for all SAP Solution Manager applications that access landscape data. The LMDB shares the CIM model with the SLD via the full automatic content synchronization mechanism, so that all SLD data provided by the SLD including the model and CR Content 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.

Note

As of SAP Solution Manager 7.2, the LMDB replaces the functions of the local SLD in SAP Solution Manager. Use the local SLD only if there is no central SLD outside SAP Solution Manager with which LMDB communicates.
LMDB retrieves data from a “source” SLD via full automatic content synchronization. The minimum SLD version required is:

Table 9:

<table>
<thead>
<tr>
<th>SAP NetWeaver Release of SLD System</th>
<th>Supported Support Package Stack Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP NetWeaver 6.40</td>
<td>not supported</td>
</tr>
<tr>
<td>SAP NetWeaver 7.0</td>
<td>not supported</td>
</tr>
<tr>
<td>EHP1 for SAP NetWeaver 7.0</td>
<td>not supported</td>
</tr>
<tr>
<td>EHP2 for SAP NetWeaver 7.0</td>
<td>SP17</td>
</tr>
<tr>
<td>SAP NetWeaver 7.1</td>
<td>SP19</td>
</tr>
<tr>
<td>EHP1 for SAP NetWeaver 7.1</td>
<td>SP14</td>
</tr>
<tr>
<td>SAP NetWeaver 7.2</td>
<td>not supported</td>
</tr>
<tr>
<td>SAP NetWeaver 7.3</td>
<td>SP12</td>
</tr>
<tr>
<td>EHP1 SAP NetWeaver 7.3</td>
<td>SP14</td>
</tr>
<tr>
<td>SAP NetWeaver 7.4</td>
<td>SP09</td>
</tr>
</tbody>
</table>

**i Note**

The SLD version will only be sufficient if you update SLD CR content and CIM model according to SAP Note 669669 and SAP Note 1701770.

You must perform these updates before you update your SAP Solution Manager to release 7.2.
Figure 5: Landscapes with SAP NetWeaver PI or Web Dynpro Java applications, showing the connections between landscape data repositories

If several SLDs are in use as a target for data suppliers, 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.

**Note**

For landscapes with **no** productive Java stack outside SAP 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.
SAP's SLD Recommendation

Do not manually create system landscape data in SAP Solution Manager in any case where SLD Data Suppliers are available. Best practice is a central SLD in which all systems register themselves, directly or indirectly, via another SLD. This SLD can forward technical system data to other SLDs. For further details, see the Planning Guide - System Landscape Directory; see System Landscape Directory link in Useful Links [page 86]

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.
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.

### 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 [http://service.sap.com/instguides](http://service.sap.com/instguides) > Installation & Upgrade Guides > SAP Components > SAP Solution Manager > Release 7.2 > 6 Additional Guides - Introscope > Introscope Setup Guide 9.7.

Agent Overview

The root cause analysis and system and application 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.

**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.


**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.

**Note**

Set up the auto-update function of the SAP Host Agent, as described in SAP Note 1473974.
Embedded Search

SAP Solution Manager uses Embedded Search as the technology for searches. Embedded Search allows you to search all data in an application in a unified way. For example, in SAP Solution Manager, you can use Embedded Search for Quality Gate Management (QGM), Change Request Management, Service Delivery or IT Service Management. For Process Management and its Solution Documentation, the Embedded Search is mandatory.

There are two variants of Embedded Search, depending on the search technologies and databases, as Embedded Search runs either on SAP HANA or TREX:

- For SAP Solution Manager on SAP HANA, no additional components are needed.
- SAP Solution Manager systems running on any other database need the standalone engine Search and Classification (TREX).

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.

SAP Landscape Virtualization Management (LVM)

LVM gives you visibility into and control over SAP and non-SAP software systems running in physical, virtual, and cloud infrastructures. LVM complements SAP Solution Manager by automating, simplifying, executing, and scheduling common administrative tasks across the whole SAP system landscape and fully integrates with SAP Solution Manager’s IT calendar. LVM reduces the time and effort required to clone, copy, and refresh SAP NetWeaver-based SAP systems including support for the SAP HANA platform and SAP S/4HANA on-premise systems. LVM also offers additional built-in functions especially designed and engineered for SAP HANA operations, like orchestrating the takeover procedure including the application layer and other management functions.

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 planning updates and upgrades with the Maintenance Planner.


Change and Transport System (CTS)

See chapter Change Control Management [page 61].

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.

4.4 Reference System Landscapes

Planning system landscapes involves different aspects. You have to decide which SLD you want to use as your central SLD and which SLD you want to use to synchronize with LMDB. Customers also often need to decide which system roles in the landscape (DEV, QA and PROD) are to be connected to which SAP Solution Manager system, if they have a multi system Solution Manager landscape. These questions will be addressed in this section.

Planning the SLD Landscape

When you plan your SLD landscape and use SAP Solution Manager you need certain information about SAP Solution Manager and SLD.
SAP Solution Manager always needs up-to-date SLD information to be able to keep the system landscape information in LMDB up-to-date. The landscape information in LMDB is the basis for almost all SAP Solution Manager functionality, but especially for tools like the Maintenance Optimizer, you want to make sure that your landscape information is not outdated, so SLD must be regularly updated for SAP Solution Manager.

1. If you run other Java systems in your landscape (for example, if you are using SAP NetWeaver Portal, PI, Web Dynpro, SAP Employee Self-Service or SAP Manager Self-Service, in your SAP ERP 6.0 application) these application need a runtime SLD to perform their activities.

2. To synchronize with SLD, LMDB requires a minimum version of the CR content and the CIM model in the SLD. If this content is too old, LMDB will send warnings and prompt you to update the CR content. Depending on which SLD system synchronizes with which LMDB, this can be a problem. As mentioned previously, several Java applications need SLD to run at all times, to perform their activities, (such as SAP PI), so a CR content update might not be possible without extensive maintenance planning.

3. You should have one central SLD in which all systems in the landscape register, to avoid conflicting information, e.g. if one systems moves from one SLD to another. The technical system information in all SLDs should be synchronized by SLD bridges

So how can we address this when planning an SLD landscape? The graphic below shows a possible set-up in which the customer follows the recommendation of one central SLD, but still uncouples the LMDB synchronization from the central SLD, to avoid dependencies between the CR content requirements on LMDB and the productive Java-based systems.

Figure 7: Customer landscape containing other Java components

The central SLD doesn’t need to be the SLD of the productive SAP PI system. It can also be a stand-alone Java system, or any other Java system in your landscape. It is important that by using the local SLD of SAP Solution Manager, the customer decouples LMDB CR content requirements from the required CR content version for the productive Java landscape. CR content is usually downward-compatible, but even though updating CR content as in SAP note 669669 shouldn’t usually be a risk, something could still go wrong, so you need to plan the maintenance of your productive SLD carefully.
The SAP Solution Manager itself can still function if the SLD is offline for a short time. It shouldn’t be a permanent state, but the SAP Solution Manager is much less dependent on the SLD than an SAP PI system would be. So if the customer patches the CR content of SAP Solution Manager local SLD to accommodate the requirements of LMDB, this is less risky. As mentioned before, the CR content should be downward compatible, so having a newer content version in SAP Solution Manager than in the central SLD will not have a negative impact on the SLD bridges from central SLD to SAP Solution Manager.

**Special Case: Pure ABAP Landscape**

In the rare case that the customer runs a pure ABAP system landscape, deciding which SLD to use is fairly simple. The ABAP-based systems still need to be defined in SAP Solution Manager, so it is still 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 itself, as no other systems have dependencies with the SLD.

**Large Customer Landscapes**

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 put CA Introscope Enterprise Manager on a separate host, and also set up a scale-out Manager-of-Managers (MoM) scenario.
The other considerations described above for small and medium customers (such as the setup of the System Landscape Directory) also apply to large customers.

Connecting Managed System to SAP Solution Manager

The other question that is often asked is how customers can connect their managed system landscape to SAP Solution Manager in a multi system SAP Solution Manager landscape, and still make sure the following:

- All cross-landscape scenarios like change diagnostics, configuration validation, and so on, are supported.
- They still have systems in their DEV and QA SAP Solution Manager to test changes that they make to the system, whether SAP note implementation, support packages or configuration changes.

**Note**

The main principle for connecting systems to SAP Solution Manager is:

All managed systems, whether DEV, QA or PROD, should be connected to the PROD SAP Solution Manager system, and some selected managed DEV/QA systems should be connected additionally to the DEV/QA SAP Solution Manager system, for development and testing purposes.

The graphic below shows this principle of a two system SAP Solution Manager landscape:

![Two system SAP Solution Manager landscape](image)

Figure 9: Two system SAP Solution Manager landscape

Only this setup ensures that Change Diagnostics and Configuration Validation, in which they can compare the configuration of different systems, work correctly. It is also logical; the main job of PROD SAP Solution Managers is to manage the system landscape, and this means the whole landscape, not only the productive part of it.
The additional connection of the managed systems in the DEV/QA landscape to the DEV/QA SAP Solution Manager system is required to ensure that changes to the SAP Solution Manager system can be tested. Particularly if the customer uses SAP Solution Manager as the central monitoring system for the whole landscape, one doesn’t want to jeopardize this by implementing anything directly in production. The customer doesn’t have to connect the whole DEV/QA landscape, only some selected systems that allow him to test all scenarios he uses.

The second connection has to be established by installing a second set of diagnostics agents on the servers of the DEV/QA systems that are also connected to the DEV/QA SAP Solution Manager.

### 4.5 Solutions in SAP Solution Manager

Solutions in SAP Solution Manager 7.2 comprise all systems, processes, and solution documentation in a customer’s business. Technically, a solution is the root of a structure that contains all of those objects.

In SAP Solution Manager 7.2, the granularity of solutions is much coarser than it was in 7.1, because solution size, performance limitations, and authorization issues, which in SAP Solution Manager 7.1 sometimes forced users to artificially split solutions into smaller chunks, no longer apply.

From a process perspective, a solution covers all the company’s business processes. From a system perspective, a solution covers all productive systems that are connected by interfaces.

As solutions are relatively closed entities, with limited access to functionality outside of themselves, there is typically only one productive solution per company. Even for an international multi-site company one solution will generally be sufficient. Multiple productive solutions typically cover the use case of a service provider running multiple productive solutions for different clients.

For more information, see Solution Documentation [page 55].

### 4.6 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 [http://support.sap.com/solutionmanager](http://support.sap.com/solutionmanager).
4.7 Users and Roles

Information about user management and authorization that is relevant for SAP Solution Manager is described in the following security-relevant guides for SAP Solution Manager:

- Authorization concept security guide
  Contains all information on the security mechanism used in SAP Solution Manager and the concept of authorizations
- Secure configuration guide
  Contains all information on security and authorizations and users for setting up the system landscape and SAP Solution Manager
- Application-specific security guide
  Contains all security and authorization information relevant for applications within SAP Solution Manager

For more information, see http://service.sap.com/instguides SAP Components SAP Solution Manager Release 7.2 4 Operations.

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 diagnostics in SAP Solution Manager, the user management and authentication mechanisms provided by the SAP Web Application Server Java are also applied. The security recommendations and guidelines for user administration and authentication, provided 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. For more information, see the guides on SAP Help Portal at http://help.sap.com Technology Platform SAP NetWeaver SAP NetWeaver Platform SAP NetWeaver 7.4 Security Information Security Guide.

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 http://help.sap.com Technology Platform SAP NetWeaver SAP NetWeaver Platform SAP NetWeaver 7.4 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 http://support.sap.com/Remote Support.

4.8 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.

- **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.
5 SAP Solution Manager Overview

5.1 Introduction

SAP Solution Manager enables customers to manage their SAP and non-SAP applications in a better way. It allows to centralize, enhance, automate, and improve the management of the entire system landscape, thus reducing total cost of ownership. SAP Solution Manager also supports customers in adapting the landscape to new requirements, for example implementing new business processes.

The following graphic shows SAP Solution Manager’s key functional building blocks.

With these building blocks, SAP Solution Manager covers the entire application lifecycle:

- 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. Lifecycle 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

**Note**
For more information, see SAP Service Marketplace at [http://support.sap.com/solutionmanager](http://support.sap.com/solutionmanager).

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### 5.2 Overview of SAP Solution Manager Processes

SAP Solution Manager provides the following 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.

- **Requirements Management**
  SAP Solution Manager contains new requirements management functions for implementation and maintenance of the entire IT solution including software changes. Business and IT organizations benefit from comprehensive requirements management functions to manage their defined software scope and all related changes.

- **Project Management**
  SAP’s project management tool, SAP Portfolio and Project Management 6.1, is fully integrated into SAP Solution Manager. Especially in the area of product development, project managers can benefit from this comprehensive project management tool to manage their projects and their project scope.

- **Process Management**
  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 Documentation**
      In SAP Solution Manager 7.2, the new Solution Documentation is the replacement for the former Projects, Solutions and Solution Directory. The approach of Solution Documentation in SAP Solution Manager 7.2 is the following:
      - Establishing of a single source of truth for Solution Documentation using a model-based approach
      - One common directory for business processes and associated documentation (unification of template, implementation, upgrade, maintenance projects and solutions)
Integration in IT processes (ITPPM, ITSM, Build SAP like a Factory, Run SAP like a Factory)
Flexible and integrated lifecycle and release management

Solution Documentation provides the following features:
- Driven Infrastructure
- Flexible and extendable model
- Fixed 3-level nucleus
- Functional view and business process view

As of SAP Solution Manager 7.2, functions such as Solution Directory, Project Administration, Business Blueprint, Configuration are obsolete. However, they can still be used in read mode.

**Test Suite**
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 suite.

**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.

**IT Service Management**
The 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.

**SAP 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 and interface monitoring
- Job scheduling management
- Data consistency management
- Business process performance optimization

**Landscape Management**
Landscape Management comprises the installation of new systems and the modification of existing systems. It involves the following tools:
- Maintenance Management

Maintenance management provides tools for the maintenance of SAP solutions. The main element is the maintenance planner in SAP Support Portal, which is the central point of access for all maintenance-related activities. The maintenance planner assists you in calculating maintenance dependencies and stack XML files for the installation of support packages, support package stacks, and enhancement
packages (EHPs). For more information about the maintenance planner, see http://help.sap.com/maintenanceplanner.

○ 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.

5.3 Installable Software Units

5.3.1 Introduction

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 11: Installable Software Units](image)
5.3.2 Usage Types

The following are the usage types for SAP Solution Manager:

- **ABAP System in SAP Solution Manager**
  Purpose: The ABAP system in SAP Solution Manager provides the ABAP foundation of SAP Solution Manager.

- **Java System in SAP Solution Manager**
  Purpose: The Java system in SAP Solution Manager provides the Java foundation of SAP Solution Manager.

- **SAP Business Warehouse (SAP BW) in SAP Solution Manager**
  Purpose: BI provides the infrastructure for data warehousing of the following SAP Solution Manager processes:
  - Root cause analysis
  - Test suite
  - System and application 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.

  **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).

5.3.3 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 required for SAP Solution Manager.

- CA Introscope Enterprise Manager
- Search and Classification (TREX) (only required if you do not use SAP HANA as a database)

For more information about the engines, see Interoperability of Central SAP Solution Manager Systems [page 30].
5.3.4 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 requires the following front-end clients:

- Web browser
  For information on the Web browser supported by the SAP Solution Manager 7.2, see the Product Availability Matrix (PAM) on [https://support.sap.com/pam](https://support.sap.com/pam).
- SAP GUI FOR WINDOWS 7.40 CORE
  Can be downloaded from SAP Support Portal, under [SAP Solution Manager 7.2 > Support user Frontend GUIs](https://support.sap.com/pam).

Front-end clients and tools, which you might need in addition:

- Adobe Flash Web Browser plug-in
  You need this plug-in to visualize management dashboards from SAP Solution Manager 7.1
- Microsoft Office
- NETWEAVER BUSINESS CLIENT 5.0
  Can be downloaded from SAP Support Portal, under [SAP Solution Manager 7.2 > Support user Frontend GUIs](https://support.sap.com/pam).
- WILY INTROSCOPE WORKSTATION 9.7 or higher
  The release you need, depends on the Introscope Enterprise Manager version you use. For more information, see SAP Note [797147](https://support.sap.com/pam).
  You can download this tool can be downloaded from SAP Support Portal on [http://support.sap.com/swdc](http://support.sap.com/swdc), under [SAP Solution Manager 7.2 > Support Packages and Patches > Support user Frontend GUIs](https://support.sap.com/pam).

5.4 SAP Solution Manager Extensions

### Note

For SAP Solution Manager 7.2 SPS 01, there are some restrictions regarding the usage of SAP Solution Manager Extensions. For more information, see [http://service.sap.com/rampup > Programs > Technology Components > SAP Solution Manager 7.2](https://service.sap.com/rampup). On the SAP Early Adopter Care Program page, navigate to the Important Information section and open the Important Information document.

- 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.
  For more information about the installation of the adapter, see the following SAP Note [1285941](https://support.sap.com/pam) (SAP Solution Manager adapter for SAP Quality Center by HP).
- Solution Manager Scheduling Enabler (SM-SE) for SAP Solution Manager
SAP Solution Manager integrates SAP Business Process Automation by Redwood, and other certified external schedulers, via the SM-SE adapter for SAP Solution Manager. It ensures efficient control and maintenance of background activities, 24 hours a day, using the advantages of SAP BPA, such as event driven scheduling, or management of business process chains.

SM-SE also integrates the OEM version of the scheduler delivered on Java NetWeaver stack, which is SAP Central Process Scheduling (SAP CPS) by Redwood.

- SAP Productivity Pak by ANCILE adapter for SAP Solution Manager

The SAP Productivity Pak by ANCILE adapter for SAP Solution Manager provides an interface to the SAP Productivity Pak by ANCILE 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 ANCILE. The documents created are linked directly to the corresponding technical objects inside SAP Solution Manager.

5.5 SAP Solution Manager Launchpad

The SAP Solution Manager launchpad is the common entry point to SAP Solution Manager. The launchpad displays a home page with tiles, which can display live status indicators, such as the number of open tasks. Each tile represents an SAP Solution Manager function or application that the user can launch. This includes SAP Fiori apps for SAP Solution Manager, WebClient UIs, work centers, and related information. The launchpad is role-based, displaying tiles according to the user’s role.

The tiles on the home page are arranged in groups. The user can personalize the layout of the home page, by grouping, moving, and removing tiles. The user can also add, delete, rename, and reorder groups. To add tiles to groups, the launchpad provides a tile catalog, which displays all the tiles that are available to a user.
6 SAP Solution Manager Processes in Detail

6.1 Introduction


6.2 SAP Engagement and Service Delivery

Use

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 Early Watch Alert, available in SAP Solution Manager. The Early Watch Alert is scheduled for single systems and for solutions, and its data can be forwarded to SAP for further analysis. An Early Watch 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

The Early Watch Alert is a prerequisite for all SAP services.

For more information about SAP Engagement and Services Delivery, see the documentation on SAP Help Portal, at http://help.sap.com/solutionmanager.

6.3 Requirements Management

The Requirements Management functions position business requirements, IT requirements, and requests for changes, as follows:

- Business requirements define what must be delivered to provide value. They are defined and evaluated by business staff in a prototype environment.
- IT requirements and requests for changes define how the business requirement is to be delivered. They cover a feasibility study, system prerequisites and required effort, which is estimated by the IT staff in an innovation environment.

The scope of IT requirements and requests for changes is split into one or more change documents to distribute the tasks between the developers after approval. In Requirements Management, business and IT requirements define the initial scope, and requests for changes define scope changes. Business requirements, IT requirements and change documents are interdependent, as well as requests for changes and change documents are. Each of these business transactions addresses the needs of specific user groups, focusing on the information relevant for their specific tasks. To provide transparency to all user groups, the status updates are synchronized across the business transactions.

To define and confirm a project scope and scope changes in a simple way and to exchange data across different organizations, customers can easily create and approve business requirements with an SAP Fiori app.

You can use Requirements Management and project management as an integrated scenario. Project managers can assign IT requirements and request for changes to any structure elements of a project. If a change document is used instead of a request for changes, the change document can also be assigned. The resource assigned to the structure element is transferred to the relevant IT requirement or request for change. The effort of the architect or developer spend on the IT requirement, the request for change, and the change document, is recorded and sent to the PPM task by a background job.

The Business Context Viewer provides ad-hoc reporting in one click, which informs you about the status, and the planned and confirmed effort of the assigned structure elements. In addition, SAP Solution Manager provides a project analysis dashboard, which shows all project-related and scope-related data in one view. The project analysis dashboard displays the integrated information to the customer in one consolidated view.

6.4 Project Management

Project managers can easily fulfill their respective tasks along the project lifecycle as follows:

- Project creation and project structuring
• Resource management by project manager or line managers
• Project calculation and accounting object assignment
• Project baseline creation and release of project for execution
• Task execution and time recording
• Project reporting and adjustment and project closure

If you have used project management roadmaps in SAP Solution Manager 7.1, you can transform the roadmap structure and assigned resources into a project template, or into a project in the project management of SAP Solution Manager 7.2.

The project management in SAP Solution Manager is fully integrated in the implementation process of SAP Best Practice packages, which provides the following content types:
• Implementation content, which will be uploaded into the new process management functionality
• Project management content, which will be uploaded into project management

During the SAP Best Practice Package import, a project is created automatically and linked to Solution Documentation. Thus the project manager can benefit directly from a predefined work breakdown structure, task duration and assigned roles, to plan and align his project with the customer.

6.5 Process Management

6.5.1 Introduction

Process management connects solution documentation with project management and requirement management.

6.5.2 Solution Documentation

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 SAP Solution Manager lifecycle phases:
• Design: Create global business process templates and specifications, for example 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, for example 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, for example, delete obsolete information and unused custom code

Solution Documentation Benefits

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

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.

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 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:

- Providing central, reliable and up-to-date system landscape information for SAP Solution Manager applications and third-party tools
- Collecting information on technical systems, hosts, databases, products, software components, and transport domains in the landscape management database (LMDB).

6.6 Test Suite

Use

The test suite is tightly integrated into the software change process. For a new SAP solution, this process starts with the business process descriptions in the solution documentation, 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.

![Diagram of test suite process]

<table>
<thead>
<tr>
<th>type of change</th>
<th>identifying the test scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>new SAP solution</td>
<td>solution documentation</td>
</tr>
<tr>
<td>implement new solution</td>
<td>test planning</td>
</tr>
<tr>
<td>update of SAP solution</td>
<td>implementing the change</td>
</tr>
<tr>
<td>update business blueprint</td>
<td></td>
</tr>
<tr>
<td>identify affected business processes</td>
<td></td>
</tr>
<tr>
<td>recommend business processes for regression tests</td>
<td></td>
</tr>
<tr>
<td>set up test system</td>
<td></td>
</tr>
<tr>
<td>SAP support packages</td>
<td>manual tests</td>
</tr>
<tr>
<td>SAP legal change packages</td>
<td>automatic tests</td>
</tr>
<tr>
<td>SAP enhancement packages</td>
<td>integration validation</td>
</tr>
<tr>
<td>customizing changes</td>
<td>defects management</td>
</tr>
<tr>
<td>customer developments</td>
<td>performance tests</td>
</tr>
<tr>
<td>change interfaces</td>
<td>status and update</td>
</tr>
<tr>
<td></td>
<td>reporting</td>
</tr>
<tr>
<td></td>
<td>test release</td>
</tr>
<tr>
<td></td>
<td>install SAP support packages, legal change packages, enhancement packages</td>
</tr>
</tbody>
</table>
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 7.2, there are three options for end-to-end test management of SAP solutions.

All three options support the entire testing process, from the solution documentation, 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.

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 support packages (SPs) and/or enhancement packages (EHPs). This is a new feature with SAP Solution Manager 7.2 using 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 business process change analyzer 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 the SAP Test Suite and Test Automation Framework
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 solution documentation 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 suite, 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 suite.

Automatic Test Execution

SAP Solution Manager 7.2 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

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 SAP Quality Center by HP with SAP Test Acceleration and Optimization

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 the solution documentation 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 SAP Quality Center by HP. 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 Manager, 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 also returns test results from SAP Quality Center to SAP Solution Manager.

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 and support packages. 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 and the effort for regression tests of impacted business processes.

See also Maintenance Management [page 71], section Scope and Effort Analyzer.

More Information

For more information about integration testing, see http://support.sap.com/solutionmanager Processes.
6.7 Change Control Management

Use

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 functions. 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.
Change and Transport System

Moving developments and changes across a system landscape requires the management of transport. In response to this need, SAP offers the Change and Transport System (CTS) for ABAP transports and the Enhanced CTS (CTS+) for non-ABAP as well as non-SAP applications. CTS helps you to transport software changes between the systems in your transport landscape.

CTS together with CTS+ enables the management of ABAP and non-ABAP objects, including combined transports for mixed objects like ABAP and JAVA.

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, central CTS serves as a technical infrastructure for enhanced flexibility functions in Quality Gate Management and Change Request Management. See also section Central Change Transport System (cCTS) below.
Details on CTS can be found on the SAP Community Network SCN:

- CTS: http://scn.sap.com/docs/DOC-7643
- CTS+: http://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, Change Request Management and Release 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.

You can use the retrofit tool as a standalone tool or in combination with Quality Gate Management or Change Request Management. With this tight integration, the retrofit tool becomes part of your overall change management process.

**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 CTS+), 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 "Request for Change" 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 Project and Portfolio Management (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 of the SAP PPM project can be linked to a Change Cycle from SAP Solution Manager – representing the infrastructure and method of how the changes are deployed into production later. This change cycle represents the release, and its phases are controlled centrally by SAP Solution Manager.
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 project plan (if it exists and if it is linked) 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.

SAP provides three main types of change cycles, to enable all of our customers to work with Change Request Management in their best possible way:

- **Continual cycle**
  Used for a continual deployment of individual changes, as soon as they are ready. All of the changes are handled independent and imported either on demand (similar to an urgent change) or based on defined import windows (daily, weekly, and so on). However, there is no common testing or deployment planning.

- **Phase cycle**
  Used for phase-driven deployment of changes. The phase cycle has dedicated phases for development, test and go-live of all related changes. The idea is to manage all the changes together, like in a project, and make sure to deploy a consistent package to the production environment. It is the pre-stage to a real “Release Management”.

- **Release cycle**
  Used for Release Management and has been prepared to support the entire lifecycle of a release, from the initial planning and scoping over the go-live until it is finally replaced by the successor release. For more information, see the next chapter.

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. 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 or implementation 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

**Release Management**

With Release Management, the Change Control Management portfolio has been extended to support all possible change and release management strategies in the best way.

It is tightly integrated with the capabilities of Change Request Management and perfectly fits to the new architecture used in SAP Solution Manager. Processes like Change Management, Requirements Management or even Process Management and Project Management can benefit from this new functionality. Release management is a relatively new but at the same time fast growing discipline within software engineering. Many companies start to look into Release Management when they follow the ITIL service lifecycle. As software systems, software development processes, and resources become more distributed, they invariably become more specialized and complex. Furthermore, software products are typically in an ongoing cycle of development, testing, and release, often running on progressing platforms with growing complexity. These systems require dedicated resources to oversee the integration and flow of development, testing, deployment, and support.

Release Management contains the planning, design, build, configuration and testing of software releases to create a defined set of release components. The SAP Release Management tool allows release teams to plan, manage and control the release schedule and track the status of each release to ensure production quality and stability. It also provides the added benefit of applying central governance and auditing over releases before decision-makers approve releases to production.

The major difference between managing projects and managing releases is that Release Management creates a new dimension, when planning deployments of software or IT solution components on top. This new “release” dimension works in parallel to the classical project or change management dimension. Release Management only defines dates, schedules and procedures for the successful deployment of the IT solution, including a complete integration test. The functional implementation and development processes, including a functional test, are governed by the Change Management – which interfaces with the Project Management of a company. Ultimately, this means the Change Management process is linked to the Release Management and there happens a handover from “changes” to the release, where it is the duty of the Release Management process to deploy this package successfully to production then.
6.8 IT Service 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 IT Service 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 IT Service 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 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.

- **IT Service Management for SAP-centric solutions (-> SAP CCoE)**
  SAP Solution Manager Service Desk is used as the SAP Expert IT Service Management tool in second-level support. The primary tool for all IT incidents could be a third-party Help Desk.

- **IT Service Management for Service Provider (-> Hoster)**
  Service Desk is the central IT Service Management platform for service providers who handle the incidents of multiple customers.

- **Third-party integration with Service Desk (-> Customers Service Desk solution)**
  Service Desk is used in several SAP Solution Manager capabilities, 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.
6.9 Landscape Management

6.9.1 Introduction

Landscape Management comprises the installation of new systems and the modification of existing systems. Successful landscape management involves a set of tools handled by several roles in one process:

- Handling data of the existing landscape
  - Gathering and providing information on systems and dependencies in the landscape
  - Implementing changes in the landscape
- Planning changes on a functional level
  - Evolve current business processes with new functions and capabilities
  - Search for new options and trigger IT to adapt the landscape to changed requirements
- Planning changes on a technical level
  - Define ways to implement features and functions requested with lowest effort and risks

These functions are provided by SAP Solution Manager on-premise installations and as services in SAP Support Portal. Included in these functions are core tools such as the LMDB and tools, which support the process, for example also test effort estimation with the scope and effort analyzer. For more information on landscape management, see http://scn.sap.com/docs/DOC-55363.

6.9.2 Landscape Management Database (LMDB)

The LMDB gathers data from the existing landscape by bringing together data from the Systems Landscape Directory (SLD) and agent data from the technical systems. The LMDB provides this data, which needs to be uploaded to the SAP Support Portal customer profile. The data is therefore mandatory in this process as is the maintenance planner, which provides the required stack.xml files for system installation, update and upgrade and download basket.

6.9.3 Maintenance Planner

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.

As of SAP Solution Manager 7.2, the maintenance optimizer tool in SAP Solution Manager is replaced by the maintenance planner in SAP Support Portal, at https://apps.support.sap.com/sap/support/mp. Here, you can visualize maintenance dependencies between technical systems, plan updates, upgrades, and new installations, and create download files that can be consumed by the installation tools. Maintenance Planner uses the technical system information provided by SAP Solution Manager.
Scope and Effort Analyzer

With the **Scope and Effort Analyzer**, you can analyze the scope of activities and test 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.

6.9.4 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 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 cost reductions regarding the operation and maintenance of your SAP system landscape.

The main custom code management capabilities are:

Custom Code Lifecycle Management

Custom code lifecycle management (CCLM) was developed to accompany your ABAP enhancements and custom 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. Custom code objects, modifications and enhancements, as well as additional information about the usage of the objects, their quality, and their current lifecycle status are automatically collected from the managed systems. 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.

This application offers an overview of your custom code situation in the managed systems, shown as a 3D-city model. The three dimensions of the city model are: quantity, severity and criticality of your custom code objects. In addition, the model also gives an overview on usage and quality of your custom code.
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 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, and methods. The logging information of the managed systems is controlled, managed, and centrally stored in SAP Solution Manager, and it 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.

The ABAP Test Cockpit

The ABAP Test Cockpit (ATC) 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 fully integrated in the CCLM.
Decommissioning Cockpit

The decommissioning cockpit is a lifecycle tool for managing custom code based on your custom code library. The cockpit helps you to identify redundant or obsolete custom code objects and to retire them from your systems. You create decommissioning analyses, work lists, collect additional information, and monitor the usage of identified custom code objects for a defined time frame. This information enables you to decide if an object needs to be deleted or if it can be kept in the system.

Quality Cockpit

The quality cockpit helps you to improve the quality of your custom code. You can create specific analysis to identify custom code objects, of which the code quality needs to be improved. The quality decision is made on checks defined in your ABAP Test Cockpit. Within the quality cockpit, you can track the progress of your code quality projects as the results of the respective ATC runs are collected in the SAP Solution Manager and are assigned to the custom code objects in CCLM.

Custom Code Management Dashboards

Custom code management dashboards are used for managing and reviewing the custom-code developed for your company. The dashboards provide an overview on seven key performance indicators (KPI) which are aligned with the dimensions of the city model. The seven KPIs are: number of custom code objects, number of custom code objects with low quality, number of custom code objects without usage information, number of critical custom code objects, number of enhancements (severity level 1), number of modifications (severity level 3), number of independent custom code objects (severity level 5).

6.10 Application Operations

Use

Application Operations comprises all functions 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. The Application Operations component provides integrated analytics functions, either out-of-the-box, or personalized by customers.

System and Application Monitoring

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 Monitoring, Database Monitoring and Host Monitoring**
  Supported for all SAP technologies, databases and operating systems (including virtualization data)

- **User Experience Monitoring**
  Includes the monitoring of performance and availability from an end user perspective, with synthetic probes.

- **Interface and Connection Monitoring as Part of Integration Monitoring**
  Ensures that interfaces and connections within your landscape (SAP and non-SAP) as well as communications, for example with SAP’s public cloud components, are reliable and efficient.

- **SAP NetWeaver PI Monitoring as Part of Integration Monitoring**
  A specialized monitoring application in SAP Solution Manager for SAP NetWeaver PI systems to evaluate the status of communication channels and messages.

- **Message Flow Monitoring as Part of Integration Monitoring**
  Enables you to investigate and trace dedicated message flows through the PI landscape on the level of single message instances.

- **Job Monitoring**
  This application provides centralized transparency for all types of jobs (BW process chains, ABAP jobs, SAP BusinessObjects jobs, SAP Data Services jobs)

- **SAP HANA and Business Intelligence Monitoring**
  Summarizes monitoring features for SAP HANA as a platform together with BI as a platform.

- **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.

System and application monitoring has the following advantages:

- 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
- Integration into existing SAP Solution Manager processes such as incident management, notification management (SMS and e-mail), root cause analysis, downtime management and technical analytics.

**Root Cause Analysis and Exception Management**

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

You can access the cross-component diagnostics application (End-to-End Workload Analysis, End-to-End Change Analysis, End-to-End Trace Analysis and End-to-End Exception Analysis) and component-specific diagnostics tools centrally from SAP Solution Manager, by clicking the Root Cause Analysis tile on the launchpad. 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, which isolates single user requests throughout complete landscapes, and identifies the component, which caused 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.

Exception management is the central place to monitor, analyze and resolve critical technical and application-related exceptions on a single instance level. It thereby supports ABAP as well as Non-ABAP components.

Technical Analytics and Dashboards

Technical analytics and dashboards in SAP Solution Manager 7.2. consists of the following layers:

- Application-specific (embedded) dashboards
- Cross-application dashboards

**Application-Specific Dashboards**

The application-specific dashboards replace the Interactive Reporting application as of SAP Solution Manager 7.2.

The dashboards are directly integrated into the corresponding monitoring application (for example, system monitoring, interface monitoring, and connection monitoring). They provide reports over metrics in the context of the monitoring application regarding availability, performance, exception status, capacity and usage for all supported managed objects. It is possible to adopt the SAP delivered standard dashboard visualization, regarding displayed metric, time frame and other specifics via the build-in personalization feature.

**Cross-Application Dashboards**

You can access these dashboards via the Dashboard Builder (via the SAP Solution Manager launchpad in the SAP Solution Manager Configuration category). The Dashboard Builder enables you to create reports by simply configuring the report title, subtitle, description, size, graphical format and data source. You can take over meta data definitions (for example, data source name) directly from the KPI catalog, which is a cloud-based, central KPI documentation tool. The Dashboard Builder supports the following data sources:

- BW queries
- Function modules
- Business process analytics

**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.

The IT task management applications and the IT calendar can be used to plan and document your operational tasks (for example, daily tasks, downtime management, and event planning).

The tools included in the guided procedures framework, support the IT operator during the execution of his daily operational activities with the following:

- Step-by-step execution
- Detailed activity description
- Central access to required managed system functions
- Automatic steps
- Logging of every activity
- Central documentation of operational expertise

The service level management application, as part of technical administration, can be used to configure, maintain and evaluate service level agreements related to the availability of the entire managed system landscape.

**More Information**


### 6.11 Custom Code Management

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6.12 Business Process Operations

The business process operations component covers all business process-related operations procedures. Instead of dealing with system-related issues such as high CPU utilization it deals with issues directly related to the execution of the core business processes, for example the long runtime of a business critical job or a high document backlog in the business process execution. The business process operations component provides the following tools:

![Business Process Operations Tools](image)

**Requirements and Constraints**

A solution, containing the relevant systems, should exist or be planned before you can use the business process operations tools in SAP Solution Manager. This can already be planned during the implementation phase, but is only realized when the installation is finished.

**Business Process and Interface Monitoring**

The business process and interface monitoring is used for the central automatic monitoring of a company’s core business processes. According to the business requirements, critical situations in the business process execution are identified and automatically alerted. Alerts are handled by alert processors via an alert inbox and according to the assigned guided procedures and making use of the tool available for the alert details, for example the detail list displaying all objects that contributed to the alert. Alerts can be forwarded to the incident management process. Once an alert situation is solved, the respective alert can be confirmed.

Business process and interface monitoring includes the following capabilities in SAP Solution Manager:

- Business process monitoring setup integrated into the Solution Documentation
- Alert inbox for business process monitoring
- Business Process Monitoring application
- OCC alert reporting
- Mass maintenance tool for business process monitoring objects
The following capabilities can also be used as part of business process and interface monitoring:

- Incident management
- Guided procedures

**Job Scheduling Management**

Job scheduling management manages your background operations centrally. It comprises several applications to establish standardized, formal processes in order to support the management of centralized end-to-end solution wide background operations. It can also be integrated with external scheduling tools.

These are the central parts of the job scheduling management:

- Documentation of background jobs in the job documentation using the seamless integration into Solution Documentation
- Monitoring of background jobs centrally by SAP Solution Manager either in the context of Business Process Monitoring or as system and application monitoring, as well as
- Job request process integrated with IT service management and change request management

You can schedule jobs in the managed system by using the job documentation or by using an external scheduler. In addition to SAP Business Process Automation by Redwood (SAP BPA), all external schedulers, which have implemented the SAP Solution Manager Scheduling Enabler interface (SM-SE) are supported.

The following tools support you in operating and optimizing your background scheduling:

- The central job overview helps to display jobs in SAP BPA and managed ABAP systems seamlessly in one UI
- The job scheduling management health check provides statistical evaluations and drill-down options for the past
- The job Gantt chart provides transparency on jobs that have been run on different application servers and work processes
- The job resource analysis supplements the job Gantt chart analysis with resource consumption data
- The job scheduling assistant generates scheduling proposals based on entered requirements and past resource consumption data

**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.

The data consistency management includes the following capabilities:

- Monitoring of standard data consistency checks
- Generic check tools like the cross-database comparison
- Unified interface and connection monitoring
- Guided procedures for data consistency investigations, including central access to data consistency tools
● Root cause analysis tools like central investigation of transactional correctness

The following capabilities can also be used as part of data consistency management:

● Incident management
● Guided procedures of the business process and interface monitoring

Business Process Improvement

Business process improvement is a methodology to identify weaknesses in existing SAP Business Suite processes in order to make them more efficient and effective without changing the process design itself, that is, no re-engineering.

Business process improvement assists you in the following:

● Increase revenue
  Reduction of your daily sales outstanding (DSO)
● Fast close
  Less exceptions and post-processing during period-end closing
● Payables
  Later payments while utilizing granted vendor discounts
● Reduce process costs
  Higher automation rates and less exceptions during automatic processing
● Improve supply chain planning
  Better planning results and less planning exceptions

The methodology is supported by business process analytics and business process operation dashboards in SAP Solution Manager.

Business process analytics is a problem-oriented tool in SAP Solution Manager based on a set of more than 1000 key figures, which are shipped out-of-the box providing fast root cause analysis capabilities. The tool is supplemented by business process operations dashboards, which inform all important stakeholders about the improvement progress.

For more information, see

● Business Process Analytics (http://scn.sap.com/docs/DOC-48233)

SAP Business Process Performance Optimization

The SAP Business Process Performance Optimization service analyzes and optimizes business processes by transactional performance. The service can be applied during the test phases of an implementation or 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

6.13 Data Volume Management

As system landscape environments become more complex and data volumes continue on an upward trend, it is now more important than ever to be able to provide a landscape-based view of the data within your environment. It is necessary not only to be able to identify the source of your data but also to determine strategies for managing and controlling it.

Data Volume Management

Data volume management is a framework that helps the solution operations team of an SAP-centric solution to balance the need of business’ access to a wealth of data and IT efforts to monitor and control data growth and to minimize data volume.

This framework consists of best practices, tools, and SAP services along all stages of the data volume management lifecycle, from the initial identification of the challenges all the way through to continuous improvement. It also supports the deployment and operation of a data volume management strategy.

Data volume management covers concepts for data discovery (alerting, monitoring) and data profiling (analyzing), data management and data archiving for reduction of data volume size and growth (managing the information lifecycle) and efficient data storage utilization (database management, data aging) in accordance with legal requirements and corporate policies.

Data Volume Management Work Center

The Data Volume Management work center in SAP Solution Manager provides a detailed insight into the source of data volume movements in single and in multi-system landscape environments. This tool is based on SAP NetWeaver BW, which provides a holistic landscape-based overview of system data. SAP’s analytical and reporting infrastructure provides a rich array of functions and features, which enable you to do the following:

• Get transparency of system landscape data consumption at different levels.
• Reveal potential for creating or optimizing a data volume management strategy.
• Leverage best-practice documents to drive your data volume management strategy.
• Simulate different data volume scenarios (for example, moderate versus aggressive archiving).
• Provide monitoring and reporting capabilities for technical KPIs across a system landscape.
• Provide a compliance check of a corporate data volume management strategy.
Major Capabilities of the Data Volume Management

- **Decision Maker**
  This tool helps you to answer the question “Which objects should I tackle first?”? The decision maker tool determines which objects consume most data, and generates a list of database tables. It ranks the list of tables according to specific KPIs like size, growth, complexity, archiving activity to prioritize objects for reduction measures.

- **Reorganization and Compression**
  This tool assists you in answering the question “What can I save by using data reorganization, compression or by migrating to SAP HANA”? It performs a simulation of potential data reduction by measures, such as data reorganization, compression, or the migration to SAP HANA, to determine the most applicable data saving strategy.

- **Service Documents**
  This function helps you to understand, which options you have to get rid of data. It generates a best practice document that describes how to handle largest data objects using the methodologies of data avoidance, summarization, archiving, and deletion. The function combines this guidance with a detailed analysis of the data in system.

  The data volume management comes with a guided procedure for the required setup in order to generate a self-service session. Data such as the list of top objects or frequently accessed objects can be used to trigger the self-service session. The result is a comprehensive report with recommendations on customer-specific environment focusing on all kinds of data volume management measures.

- **Archiving Information**
  This tool helps you to answer the question “Which archiving activities are ongoing”? The tool monitors archiving and related deletion activities in the system and provides landscape wide reporting about technical achievements in terms of archiving statistics.

- **Improvement Projects**
  This is a guided procedure for data volume management improvement projects based on predefined key performance Indicators such as average monthly or weekly growth rate, average number of archiving runs per month, and so on. The progress of the project can be monitored and analyzed using the interactive continuous improvement dashboard.

- **Forecast and Simulation**
  This tool helps you to answer the following questions:
  - What will be my future system size?
  - What about my cost savings?

  The forecast and simulation application enables you to choose different parameters to simulate the future expected size of a system based on the historical data collected. It helps to forecast the system growth if certain reduction measures have been taken, for example archiving (aggressive or moderate), the migration to SAP HANA, database reorganization and compression. Based on several such options, forecast on the system growth and the cost savings over time can be simulated to enable an efficient decision making.

- **Statistics and Trends**
  This application provides reporting, evaluation and trend analyses across all business and technical levels. It provides answers to the following questions:
  - Who consumes what?

    The data allocation statistics dashboards are designed to show the data distribution in the entire landscape by different groupings (product, system, application area, archiving object, and document type) to get an impression on top-ranked data consumers. The dashboards enable effective decision making on which application-related data should be tackled first by data reduction measures. The tool provides a historical view of data size and growth and identify areas of high disk space allocation.
○ How old is my data?
The time-based distribution of records dashboards answer this question. Based on the age of the data, it gives an indication of whether or not archiving or deletion potential exists. That means you can determine if data is old enough to archive. This so-called “age footprint” of a heterogeneous landscape easily enables to have an overall quality check on business data from an archiving perspective. The time distribution of record analysis serves as a valuable input for starting a deeper analysis on the savings potential.

● Potential Savings
At the heart of data volume management lies the savings potential analysis. This tool helps visualize the potential for reduction through one of two methodologies: archiving or deletion or both. This then serves as the driver for data volume management strategy activities and potential discussion with business stakeholders and application teams. The system comes with pre-delivered SAP Best Practice residence times, which serve as a starting point. You can also define your own residence times to detect backlogs in your already implemented data volume management policy.
7 Useful Links and SAP Notes

7.1 Introduction

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

7.2 Useful Links

The following table lists useful links on SAP Service Marketplace or SAP Community Network, in addition to those in the More Information [page 8] section.

<table>
<thead>
<tr>
<th>Content</th>
<th>Location on SAP Service Marketplace or SAP Community Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information about creating error messages</td>
<td><a href="http://support.sap.com/incident">http://support.sap.com/incident</a></td>
</tr>
<tr>
<td>SAP Software Distribution Center (software download and ordering software)</td>
<td><a href="http://support.sap.com/swdc">http://support.sap.com/swdc</a></td>
</tr>
<tr>
<td>SAP Online Knowledge Products (OKPs) – phase-based Learning Maps</td>
<td><a href="http://support.sap.com/ekt-solutionmanager">http://support.sap.com/ekt-solutionmanager</a></td>
</tr>
<tr>
<td>How-to documents (recommendations on how to use functions, including examples)</td>
<td><a href="http://support.sap.com/solutionmanager">http://support.sap.com/solutionmanager</a></td>
</tr>
<tr>
<td>Information on SAP GUI</td>
<td><a href="http://scn.sap.com/community/gui">http://scn.sap.com/community/gui</a></td>
</tr>
<tr>
<td>System Landscape Directory</td>
<td><a href="http://scn.sap.com/docs/DOC-8042">http://scn.sap.com/docs/DOC-8042</a></td>
</tr>
<tr>
<td>Software Logistics</td>
<td><a href="http://scn.sap.com/community/it-management/alm/software-logistics">http://scn.sap.com/community/it-management/alm/software-logistics</a></td>
</tr>
</tbody>
</table>
7.3 Useful SAP Notes

The following table lists useful SAP Notes, in addition to those in the SAP Notes [page 7] section.

Table 11:

<table>
<thead>
<tr>
<th>SAP Note Number</th>
<th>SAP Note Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>394616</td>
<td>Release strategy for SAP Solution Manager (ST)</td>
</tr>
<tr>
<td>1109650</td>
<td>SAP Solution Manager extension add-ons</td>
</tr>
<tr>
<td>1472465</td>
<td>SAP Solution Manager 7.1 and 7.2 - System Landscape Setup Guide</td>
</tr>
<tr>
<td>2248724</td>
<td>Root Cause Analysis in SAP Solution Manager 7.2</td>
</tr>
</tbody>
</table>
The following questionnaire helps you to collect all the relevant data for your implementation.

Table 12:

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

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](https://support.sap.com) (End-to-End Diagnostics)?
● Yes
● No

Do your managed systems fulfill the prerequisites in SAP Note [1010428](https://support.sap.com) (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)
  
  For more information, see SAP Note 1487626.

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 (http://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 (http://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 7.40?
• 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
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Any software coding and/or code lines / strings ("Code") included in this documentation are only examples and are not intended to be used in a productive system environment. The Code is only intended to better explain and visualize the syntax and phrasing rules of certain coding. SAP does not warrant the correctness and completeness of the Code given herein, and SAP shall not be liable for errors or damages caused by the usage of the Code, unless damages were caused by SAP intentionally or by SAP’s gross negligence.

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