This chapter reviews application lifecycle management with SAP Solution Manager and explores sizing considerations. You’ll learn about the installation and upgrade of an SAP Solution Manager system and how to manage authorizations.

“SAP Solution Manager 7.2 Environment and Sizing”

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The Authors

Jereme Swoboda

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Chapter 4

SAP Solution Manager 7.2
Environment and Sizing

Techniques You’ll Master

- Application lifecycle management
- SAP Solution Manager key value chains
- Key considerations for sizing SAP Solution Manager
- What to know when installing and upgrading SAP Solution Manager
- SAP Solution Manager authorization and user management
In this chapter, we will review a variety of topics. First, we will cover application lifecycle management and how SAP has designed SAP Solution Manager to support the entire lifecycle of an application. This will take us through the major functions of SAP Solution Manager 7.2. With that we will review how these lifecycle management tools impact the sizing of an SAP Solution Manager 7.2 system. Each tool has its own data storage requirements. Understanding what each tool does also will provide key insight into the key sizing considerations. In addition, we will discuss the installation and upgrade process of SAP Solution Manager 7.2. There are multiple key details surrounding the installation and upgrade process that all certified SAP Solution Manager administrators must all be aware of. Finally, we will review how SAP handles users and the authorizations they require to execute application lifecycle management tools within SAP Solution Manager 7.2.

**Real-World Scenario**

In the real world, many people do not approach SAP Solution Manager with the detailed thought and planning that it deserves. SAP Solution Manager should be fully understood before being implemented. This is what a certified SAP Solution Manager administrator should bring to the table: real-world experience, a complete understanding of what SAP Solution Manager provides a customer, and knowledge of how to put its abilities into action. The SAP Solution Manager certification exam will ensure you are capable of doing this well.

**Objectives of This Portion of the Test**

The objective of this chapter is to confirm you have a high-level understanding of the capabilities SAP Solution Manager 7.2 provides to a customer, as well as how to properly plan for the sizing, installation, and upgrade of SAP Solution Manager 7.2. This chapter will also provide information on how to assign the correct access to end users based on the out-of-the-box roles and authorizations provided by SAP. All this will help ensure you can prove you understand the purpose of SAP Solution Manager by passing the SAP Certification exam on the configuration of SAP Solution Manager.

**Key Concepts Refresher**

Now, let’s to discuss the key concepts and value chains that define why SAP created SAP Solution Manager to support the standard lifecycle of any SAP application. The sizing, installation and upgrade of SAP Solution Manager is a key part of its implementation, and understanding the key concepts around the implementation or upgrade of SAP Solution Manager is a key skill for all SAP Solution Manager administrators. Finally, without the SAP-delivered security roles, no one would be able to utilize SAP Solution Manager. With that, how can you have a successful implementation without granting end users access to the system? Understanding how to get people the access they need is the last piece of ensuring SAP Solution Manager and its application lifecycle management tools are deployed properly.

**Application Lifecycle Management and the Application Lifecycle Management Wheel**

SAP Solution Manager is a collection of tools created by SAP to support the lifecycle of its SAP business solutions. In its infancy, it was purely a technical tool that was required for upgrading other SAP business solutions. With SAP Solution Manager 7.2, a real transformation has occurred. SAP Solution Manager is now a system that can truly support the business and provide real value that can be attained by the business and the basis technical teams.

**What Is SAP Solution Manager All About?**

With new technologies being developed every day, a business’s ability to adapt and grow is becoming more and more important. These changes can greatly impact how a business runs and its value chains, which forces businesses to reassess the traditional approaches and decide if it is time to replace their old processes with new ones. This is where SAP Solution Manager 7.2 steps in to support the business and the changes impacting it. SAP Solution Manager 7.2 is a platform that enables the IT team and the business to align and drive the “business of IT.” To enable this alignment between the business and IT, there are incredible enhancements to SAP Solution Manager with version 7.2. SAP has designed SAP Solution Manager to provide four key value chains that are essential to any business:
1. Portfolio to project
   - Provides abilities to drive a business portfolio of projects by balancing business initiatives and the business value they provide while ensuring that IT capacity, skillset, and timelines are considered
   - Improves the visibility of data to enable better decision-making
   - Provides the ability to build a strategy to provide balance across all projects
   - Provides roadmaps and KPIs to improve communication during project implementations

2. Requirements to deploy
   - Enables customers to build what their business needs at the right time, with a real outcome that the business can measure
   - Supports the use of new agile methodologies, as well as traditional development methodologies
   - Provides a framework for the execution of a project and the service it requires
   - Enables visibility into the quality, schedule, and cost of the services delivered

3. Request to fulfill
   - Provides the ability to catalog, request, and fulfill services
   - Enables the IT organization to manage subscriptions and total cost of services, as well as manage and measure the fulfillments of suppliers
   - Provides the IT organization with tools to transition to a service broker model

4. Detect to correct
   - Enables the IT organization to anticipate and resolve issues on production systems
   - Unites the entire IT organization to enhance results and increase efficiency
   - Identifies issues before the business is impacted
   - Provides visibility from end to end across the entire set of SAP solutions

These four key value chains are the backbone of all the application lifecycle management tools within SAP Solution Manager 7.2. The four value chains exist in two main categories: the "build" side of the house, portfolio to project and requirements to deploy, and the "run" side of the house, detect to correct and request to fulfill. These value chains are the high-level reason that SAP has invested so heavily in SAP Solution Manager to better support their customers. These key areas of transformation that occurred in SAP Solution Manager 7.2 to support the four value chains are shown in Figure 4.1. These are the areas that SAP has focused on in the transformation of SAP Solution Manager to provide a truly modern and integrated platform for supporting the lifecycle of an SAP business solution and to support the digital business transformation that is occurring more rapidly than ever.

![Figure 4.1 Key Areas of Transformation in SAP Solution Manager 7.2](image-url)

The Lifecycle of an Application

The lifecycle of all applications is the same. The application lifecycle management wheel essentially describes the lifecycle of an application and how each SAP Solution Manager application lifecycle management tool supports each step of an application lifecycle. The application lifecycle starts with a business requirement. This business requirement is usually very complex and requires a new application, if not multiple applications.

These six phases form the entire lifecycle of an application. In a traditional sense, these six phases of the complete lifecycle of an application can be put into a continuous wheel because the optimize phase can easily lead directly back into the requirements phase, therefore both completing the lifecycle and starting it over...
again. This wheel visually represents the entire application lifecycle in a single graphic, making it easy to understand.

The complete lifecycle of all applications involves six phases:

1. **Requirements**
   Collect a business need or demand for a new business process or changed business process. Review and confirm the service-level fulfillment of the application and perform any activities to improve the results of those results.

2. **Design**
   The solution must be designed to meet a business requirement. Convert a business requirement into an actual detailed plan or specification.

3. **Build and Test**
   Install and configure the application, then validate that the application meets the business requirement and design specification. The application or solution now needs to be installed and tested to ensure it operates as the requirement and design say it should.

4. **Deploy**
   Move from a test environment to a productive one that is now live with the business. This could also be called the go-live. This is where the application or solution is deployed to the business for productive use by the business.

5. **Operate**
   Once the system is up and running, the IT team needs to keep it that way. This is when we monitor for and resolve any issues that may come up with the solution. Provide monitoring and other services for day-to-day ongoing operations of the application.

6. **Optimize**
   This is where we introduce changes or updates to the solution to make it better and run smoother.

SAP Solution Manager has been designed to support the entire lifecycle of both SAP and non-SAP business solutions. The application lifecycle management tools that are offered in SAP Solution Manager 7.2 are all designed to support the four value chains discussed earlier. How each application lifecycle management tool supports each value chain is illustrated in Figure 4.2.

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**Complete Set of Application Lifecycle Tools**

This complete lifecycle is supported by SAP Solution Manager in its entirety. Let’s look at each set of tools and its basic functionality. Each of the following application lifecycle management tools supports each of the step of the lifecycle of any application and is provided in SAP Solution Manager 7.2 out of the box:

- **Project management**
  Integrated with SAP Portfolio and Project Management, enabling the management of project timelines, resources, and the status of a project.

- **Process management**
  Enables the management of business processes from end to end. Describes the business processes from both a business perspective and a technical system perspective. This includes both solution administration and solution documentation.
Sizing Considerations

When going through the sizing procedure as a part of an SAP Solution Manager installation or the implementation of new application lifecycle management tools, it is important to consider a variety of topics.

First, how many managed systems will be connected to SAP Solution Manager, and how large are they? Consider that tools like system monitoring, data volume management, and custom code management all collect and store data about each managed system. The more managed systems, the more data is collected, and the more data will need to be stored in the SAP Solution Manager for the ABAP application server database. Also, Wily Introscope Enterprise Manager stores data as well. So that must be considered in the planning.

Second, which application lifecycle tools will you be activating, and on which managed systems? Each application lifecycle management tool has different requirements for data storage. If you only use tools like CharM and solution documentation, then the storage requirements will be lower when compared to application operations monitoring tools. However, CharM and solution documentation do use TREX or SAP HANA for embedded search. These indexes can become very large, so they need to be accounted for as well during sizing.

Third, will you be activating any other lifecycle tools in the near future? This is important to know because if you are going to turn on more application lifecycle management tools in the next year, then you should just plan for them now instead of in six months.

Finally, how many end users will be utilizing the SAP Solution Manager system, and how frequently will they be logging in? The number of end users is always a key point to consider for any system. The more end users, the more dialog work processes will be needed for all the end user calls. This could also mean a dialog application server may be needed.

All these questions are key considerations to take into account when sizing an SAP Solution Manager system. As with all systems, it is critical to use SAP Best Practices and methodologies when sizing an SAP system. SAP created the system; it knows the best methods for coming up with the proper hardware for an SAP Solution Manager system. All these questions will be asked by SAP when you execute the SAP sizing tool. SAP provides the quick sizer tool that will ask all of the proper questions to determine the proper hardware size of SAP Solution Manager; you can find this tool at https://www.sap.com/about/benchmark/sizing.html.
Installing SAP Solution Manager

The installation and upgrade of SAP Solution Manager 7.2 is a critical part of the entire process. Without a well-planned out, quality installation, the rest of configuration will mean nothing. Next, we will discuss the key points of both processes.

In Chapter 3, we covered all the required components of SAP Solution Manager 7.2 in great detail. We don’t need to rehash all those components here; a high-level review of the planning of SAP Solution Manager is all that we need. From the beginning, it is important to think about the application lifecycle management tools that an organization plans to put in place, both from an immediate perspective and in a long-term plan for future implementations. Be sure to run the quick tools that an organization plans to put in place, both from an immediate perspective and in a long-term plan for future implementations. Be sure to run the quick tools that an organization plans to put in place, both from an immediate perspective and in a long-term plan for future implementations.

Hardware planning and complete the installation of the SAP HANA database. A customer must first determine which option fits their specific scenario: an upgrade of a current SAP Solution Manager 7.1 installation or a fresh implementation of SAP Solution Manager 7.2. If you have content in any of the areas listed in Table 4.1 that is required for future use of SAP Solution Manager, then you must upgrade to preserve that content for reuse in SAP Solution Manager 7.2.

The database is also a large consideration. SAP Solution Manager 7.2 supports SAP HANA 2.0 and it is included in the maintenance contract. This is a great opportunity for a customer to utilize SAP HANA. This will save on the licensing costs of other databases. It can also be a great opportunity for customers that are planning to move other systems to SAP HANA and want to use SAP Solution Manager to get their feet wet and gain experience in the use of the database before they move on to migrating business-critical systems to it. If SAP HANA is going to be used, then you must have an SAP-certified SAP HANA consultant to complete the sizing and hardware planning and complete the installation of the SAP HANA database.

From a standard installation planning perspective, it is important to put together a complete list of all the decisions that must be made during the installation. It is always a great idea to have a complete list of all the ports that will be used, the hostnames, the passwords for the users, and so on. This way, both systems are installed exactly as expected and the other tasks, like installing diagnostic agents, will be much simpler.

Of course, utilizing the maintenance planner is the ultimate way to plan the installation of the system. Utilizing its planning capabilities to build out the system will ensure the actual process of installing it will go without a hitch, as well as ensure the system has all the latest components and patches that it requires to function properly.

Upgrading SAP Solution Manager

A customer must first determine which option fits their specific scenario: an upgrade of a current SAP Solution Manager 7.1 installation or a fresh implementation of SAP Solution Manager 7.2. The answer depends entirely on which option fits their specific requirements. The chosen upgrade option will be based on the primary goal—either to preserve content or significant configuration. The content preserved is content that is specific to the functionality in place and actively being used. The content can range from ChaRM projects to business processes mapped in solution documentation. The specific content varies depending on the functional area in which it is used. Understanding the content contained in the systems is an essential part of a successful upgrade. During the upgrade, this content is activated to conform to the new standards introduced with SAP Solution Manager 7.2. If you have content in any of the areas listed in Table 4.1 that is required for future use of SAP Solution Manager, then you must upgrade to preserve that content for reuse in SAP Solution Manager 7.2.

Each area of SAP Solution Manager is impacted by varying degrees. The level of impact is a critical consideration when performing an upgrade, from the technical changes to those that impact end users. Table 4.1 lists the areas of SAP Solution Manager and the level of impact to each area. High impact means the functionality has been completely redesigned, requiring major changes; training will be required, and the changes should be considered a major release. Medium impact means the functionality has been enhanced; some training may be required, and some configuration changes are required, but overall medium-impact changes should be considered a minor release.
Time and Effort

Beyond content, you must also consider the time and effort spent to configure your current SAP Solution Manager landscape. With an upgrade, the configuration in Transaction SOLMAN_SETUP essentially will be complete, with only a few areas that need to be re-executed. Considering the high number of man hours spent fully configuring a two-system landscape (development and production) and connecting it to many managed systems, this fact alone may be reason enough to venture down the path of an upgrade. Even if you only have minimal functionality being used yet have SAP Solution Manager connected to 20 or more managed systems, the effort to reconfigure these connections can exceed the time difference between an upgrade and a fresh install. If a customer only has the basic configuration completed, multiple systems connected, and the SAP Solution Manager installation is free of unused projects and solutions, the upgrade is simple compared to a system that has significant configuration that will be impacted by an upgrade. In that case, an upgrade can be the better option because the time to upgrade is the primary factor of concern in this scenario.

Another prime reason for a fresh install is if a customer is currently running SAP Solution Manager 7.0. Currently, SAP has not provided an upgrade path directly from SAP Solution Manager 7.0 to SAP Solution Manager 7.2. If you have ChaRM or some other functionality or solution critical to the business running on SAP Solution Manager 7.0 and it must be preserved, you must first upgrade to SAP Solution Manager 7.1 and then upgrade to SAP Solution Manager 7.2. In our experience, the number of hours required to perform both upgrades exceeds the number of hours to install SAP Solution Manager 7.2 from scratch and configure the functionality that needs to be preserved. The best path forward depends on how many solutions are being used actively in SAP Solution Manager 7.0 and how tightly integrated they are with the business. For most SAP Solution Manager 7.0 customers, a fresh install is the best path forward to achieve the goal of running SAP Solution Manager 7.2.

**Upgrade Process**

The upgrade process consists of four primary steps:

1. Prepare SAP Solution Manager 7.1 from a technical perspective for upgrade.
2. Prepare content for activation by executing a content activation preupgrade procedure critical to the functional side of SAP Solution Manager.
3. Execute the actual upgrade to SAP Solution Manager 7.2 and perform the dual-stack split.
4. Activate the content via the content activation process and perform technical postupgrade activities.

**Table 4.1 Impact of SAP Solution Manager 7.2 Upgrade**

<table>
<thead>
<tr>
<th>Area</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business process monitoring</td>
<td>High</td>
</tr>
<tr>
<td>Solution documentation</td>
<td>High</td>
</tr>
<tr>
<td>SAP Portfolio and Project Management</td>
<td>High</td>
</tr>
<tr>
<td>Test management</td>
<td>High</td>
</tr>
<tr>
<td>Change request management</td>
<td>Medium</td>
</tr>
<tr>
<td>Quality gate management</td>
<td>Medium</td>
</tr>
<tr>
<td>Custom code management</td>
<td>Medium</td>
</tr>
<tr>
<td>Application operations</td>
<td>Medium</td>
</tr>
</tbody>
</table>

**Tip**

For complete details on all the technical requirements, refer to SAP Note 2227300.

The procedure for upgrading to SAP Solution Manager 7.2 consists of executing Software Update Manager to upgrade the dual stack to SAP Solution Manager 7.2, followed by executing a dual-stack split with software provisioning manager. These steps are all that are required when the database and operating system stay the same. With SAP Solution Manager 7.2, the SAP HANA database is now included in the license. Many people are migrating to SAP HANA to save on database licensing costs, but others may want to migrate to another database besides SAP HANA. This section discusses the options available for executing a database migration with the upgrade. Each procedure has its own pros and cons. The decisions depend on your specific requirements and tolerance for extended downtime.

**Migration Path Using Standard Procedure**

The standard migration path shown in consists of the same initial steps: upgrade with Software Upgrade Manager and dual-stack split with software provisioning manager (as seen in Figure 4.3). The migration occurs after the split via software provisioning manager. The migration is executed for each SAP NetWeaver stack—Java and ABAP.
Within this standard procedure, there are two options:

1. In-place migration
2. Migration with parallel export/import

Each option has its own pros and cons, which we will review, but essentially the primary difference is the order in which the system copy steps are performed; one is a sequential procedure and the other is a parallel procedure.

**In-Place Migration**

In an *in-place migration*, the following steps are executed in a sequential procedure for each SAP NetWeaver stack, using a heterogeneous system copy (like the dual-stack split procedure). First, the ABAP stack is exported from the current database. Then, the ABAP stack instance is uninstalled, leaving the database free for a Java-stack database migration. Next, the new SAP system is installed using the export, resulting in a system using the same system ID (SID) and hostname running on an SAP HANA database. Optionally, the same steps for the Java stack can be performed as a heterogeneous system copy to install a new Java instance on SAP HANA.

The upside to the in-place migration is that it allows the preservation of the SID and hostname, thus simplifying the procedure, but it does have a longer downtime than the parallel option.

**Migration with Parallel Export/Import**

In a *migration with parallel export/import*, the same steps are executed in a different order and in parallel. First, install the new system on SAP HANA, preparing it for the import. Then, in parallel, execute the export of the ABAP stack from the old database and import the data into the SAP HANA database already in place. Finally, switch to the new system and perform all post-system-copy activities, including the uninstall procedure to remove the old system. This results in a new system with a new SID and hostname running on an SAP HANA database. Optionally, then follow the same steps for the Java stack to perform a heterogeneous system copy and install a new Java instance on SAP HANA.

The upside to the parallel option is less downtime than the in-place option; however, a change in SID must be managed. The added benefit of having both systems available at the same time, allowing for a quick switch back to the original system and/or comparison with the original if required.

**Migration Path Using the Simplified Procedure**

The new simplified option shown in Figure 4.4 incorporates the database migration option (DMO) within Software Update Manager. This option is best if the customer already knows that they want to migrate to SAP HANA or SAP Adaptive Server Enterprise (SAP ASE). This option executes the upgrade to SAP Solution Manager 7.2 and the database migration in a single step using SUM, simplifying the upgrade and eliminating the extra step of migrating to SAP HANA with SWPM after the upgrade. Once the upgrade and migration are complete, split the dual stack and optionally migrate the Java stack to SAP HANA using software provisioning manager.

This simplified procedure has several upsides, including the least amount of downtime because the migration is performed during the uptime of the upgrade.
processes. This eliminates the downtime required when using software provisioning manager to perform the migration. This option reduces the overall complexity of the upgrade and migration. The standard option is more complex, has more steps, and has a longer downtime, but it has its own benefits. The primary benefit of the standard procedure is the ability to have an interim productive use between the upgrade and migration. Each option should be thoroughly reviewed, looking at the pros and cons of each, to find the appropriate method that meets the customer’s specific requirements.

Before beginning the prepare activation phase in SAP Solution Manager 7.1, it is important to first understand how the system landscape logical components are transformed. Review Chapter 2 to fully understand the concepts behind the prepare activation phase. To enable the content activation phase, first create the Transaction Prepare_activation, which is the actual guided procedure that is executed in SAP Solution Manager 7.1. For complete details of how this is done, see SAP Note 2599354 and SAP Note 2536523.

Prepare Activation Phase

The prepare activation phase provides four primary activities. During this preparation phase, no actual changes are being made. Only the issues with the content would require a change. The four activities are as follows:

1. The first step is to scope out the projects and solutions that will be activated. This is critical because in SAP Solution Manager 7.1 all the content is stored in solutions and projects. Consistency checks occur in every step of the guided procedure. These consistency checks review all content and logical components for issues that will prevent the activation of the content in version 7.2. This consistency check is absolutely critical because this content can only be fixed in SAP Solution Manager 7.1. Once the upgrade is complete, a restore of the system back to version 7.1 would be required if an issue needed to be fixed with the content.

2. In the second step, the logical components and solutions are redesigned into a new single solution with logical component groups for each system landscape.

3. In the third step, you define the branches that will be created and which branch the content stored in the solutions and projects will be activated in. This step is essential for any ongoing projects. You do not want business processes that are not being used in production to go into the production branch. They should be activated in the development or maintenance branch. All these decisions make it important to start this prepare activation process as early as possible.

4. The activation process in SAP Solution Manager 7.2 is another guided procedure. This guided procedure is where the content is actually activated into its new form. As shown in Figure 4.5, the process starts with prepare activation, moves on with the technical upgrade using the Software Update Manager, and ends with the content activation in version 7.2.
Managing Authorizations

With SAP Solution Manager 7.1 and continuing with SAP Solution Manager 7.2, SAP has done a good job of providing out-of-the-box single and composite roles to enable system administrators to securely provide the right level of access to team members. Once configuration of SAP Solution Manager is complete, the system should be handed over to the organization’s SAP security team. (We recommend that the authorizations within SAP Solution Manager should be owned by the SAP security team within your organization.)

When navigating the SAP Help for SAP Solution Manager 7.2, there are three basic guides included within the security section. The *SAP Solution Manager Authorization Concept Guide* contains information about the high-level organization of security within SAP Solution Manager. If you wanted to know more about the role types delivered and the design implemented by SAP, you would study this guide. The SAP Solution Manager Secure Configuration Guide covers technical users used to configure the system, background users, and remote function call users. This document includes information on ports used and virus scan profiles. The most important and final security guide provided by SAP is the SAP Solution Manager Application Security Guide. In this guide, you can find information on the composite roles provided by SAP for individual functions within SAP Solution Manager. If you have a team member who needs change request management, test suite, and monitoring access in SAP Solution Manager, for example, you can reference this guide to determine the composite roles to be assigned.

User Administration

With SAP Solution Manager 7.2, SAP has enhanced the user administration tool. This tool greatly simplifies the process for granting access to specific functional areas within SAP Solution Manager 7.2. The user administration tool allows for the automatic creation and assignment of SAP-delivered roles based on functional area, as well as the updating and management of both the internal system users on SAP Solution Manager itself and the system and remote function call users that exist on the managed systems. The user management tool is accessed two ways. The initial access can be found in Transaction SOLMAN_SETUP, via the link found in the lower left-hand portion of the screen under Related Links • Administration (see Figure 4.6).
Once the security team has been granted access to the SAP Solution Manager Administration section of the SAP Fiori launchpad for SAP Solution Manager, the user administration tool can then be accessed there, via the User Administration tile shown in Figure 4.7.

Users for Configuration of SAP Solution Manager

Once you open the user administration tool, you will see three tabs: Users in SAP Solution Manager Client, Users in Managed Systems, and Users for Configuration. The latter tab allows for the assignment of composite roles that grant access to the guided procedures for configuring each functional area of SAP Solution Manager (see Figure 4.10). The overall layout and options are the same for each tab.

The status of the roles for each user is listed on the left; if yellow, the roles assigned to the user need to be updated with new versions. The Mass Update option allows for a background job to update the roles for all users. When a role is assigned, the tool copies the SAP standard role into a custom Z role. The naming convention of this role in the customer namespace can be defined in expert mode, as shown in Figure 4.8. To make changes, you must also be in edit mode. The Documentation button on the left provides a description of the access that is granted.

Before you can assign someone access, you must first create a dialog user in Transaction SU01. Then the user can be assigned to a functional area or use case. Select the Maintain List of Users button. In the pop-up window, select a use case, as shown in Figure 4.9.
To determine which use case to choose, use the Display Documentation button for more information. Once you select a use case, you can then add more lines and add the users to each use case. When done, select the Assign Users button to finish the assignment and close the window.

Once the users have been assigned to a use case, you will be able to scroll down and see all the roles that will be assigned. On the right side, you can find documentation for each role and the access it grants. Select the Execute button to have the tool create the Z role and assign it to the user, as shown in Figure 4.10.

Users in Managed Systems

The Users in Managed Systems tab allows for the management of the SAP Solution Manager system users in the managed systems that are created during the execution of managed system configuration. Any time the solution tools are updated or a support package is installed on SAP Solution Manager, SAP introduces new versions of the roles assigned to these users. This tab is used to automatically deploy the new versions of these roles. This greatly simplifies the management of these users. Figure 4.11 shows an example of this step. The same options are available as on the other tabs.

End Users in SAP Solution Manager Client

The Users in SAP Solution Manager Client tab allows for the granting of access to different functional areas for end users to use each one. SAP has predefined roles for each use case depending on the functional area. For example, when activating ChaRM, you can use this tool to assign the roles required for the different user
activities within ChaRM. The same options are available for this tab as well, as shown in Figure 4.12.

![Figure 4.12 User Administration Tool: Users in SAP Solution Manager Client](image)

**SAP Solution Manager Composite Roles**

Over the years, SAP has relied primarily on documentation to support SAP clients in the process of defining the required security roles to give SAP Solution Manager users the access they require to perform their day-to-day duties. Among all SAP documentation, the security guides from SAP have been some of the longest guides available, providing lots of information on the roles delivered and the access they grant. The nature of these guides and the detail they provided made it a complicated and time-consuming process to fully digest and understand them. The SAP security guides are still provided by SAP, but they are no longer the sole resource for finding the roles required for setting up users with access, creating managed system configuration system users, and creating SAP Solution Manager system users. The description of these roles can be found in the User Administration tool. The security guides are released and updated with each support package that is released by SAP.

In this section, we will cover the best practices for utilizing the SAP Solution Manager security roles, including how the roles are used and assigned, as well as the user administration tool and how it is used to assign the roles to users that require access to specific SAP Solution Manager functionality.

**Scenario-Based Security Composite Roles**

SAP has delivered a wide variety of roles and composite roles that are designed to provide access to different functional areas within SAP Solution Manager, including composite roles that are designed for different levels of access, such as read-only, execute, and administrative. These composite roles are designed specifically for each use case, depending on the requirements of each area. The security guide provides a complete list of these roles and a description of the amount of access granted by each role. These out-of-the-box roles mean that more than just the basis team can configure different functional areas of SAP Solution Manager, especially since most of the configuration in SAP Solution Manager is executed using step-by-step guided procedures that include help documentation for each step and activity. Simply by using the guide or the user management tool, a security team can grant detailed specific access to anyone for their area of responsibility. SAP Solution Manager is no longer just a basis tool to be used solely by the basis team. Especially with the advancements in SAP Solution Manager 7.2, which SAP has designed to be a business tool, enabling super users within the SAP teams to utilize advanced tools to further support their SAP and non-SAP system landscapes.

Conceptually, SAP provides single and composite roles for three user types within SAP Solution Manager: administrators, configurators, and users. Think of the administrator role being performed by someone who will be executing the mandatory configuration items discussed in Chapter 4 and Chapter 5. The configuration user roles provided by SAP are SAP Solution Manager tool-specific. If you delegate access to a change manager to be able to configure change request management in SAP Solution Manager, then you can trust the SAP-provided composite roles will not allow that change manager to adjust configuration in application operations or data volume management. You can silo SAP Solution Manager users into their own functions without fear of them overriding configuration in another area. SAP Solution Manager is a shared tool; no one team owns all SAP Solution...
Manager tools. *End user* role templates provided by SAP are meant to be assigned to team members that need access to transact within a particular SAP Solution Manager tool. For example, if you needed a team member to create and work within a change request in change request management, then you would assign the composite user role for change request management to that team member. The composite roles delivered by SAP for each SAP Solution Manager tool are continuously updated with each new support package stack. If you copy the SAP-delivered roles into your customer namespace, then you need to plan on remediation effort with each SAP Solution Manager upgrade. SAP does support the direct assignment of SAP-provided roles to SAP Solution Manager users, which typically drives the requirement for a customer-specific SAP Solution Manager role that defines access to customer objects. For example, in Chapter 8, we will copy the SAP-provided Transaction SMCR (Change Request) into object ZMCR. The SAP-provided roles for change request management include authorizations for Transaction SMCR. You have two options: The first is to copy the SAP-provided composite role (and all single roles) into the customer namespace, then add the authorization for that specific transaction type to those new customer namespace roles. The other option is to create a single role or roles that provide access to only those customer-created objects and directly assign the SAP-provided roles. The latter would require the least amount of maintenance because you are not copying 60-plus SAP-provided single roles into your namespace. Internal company policies sometimes prevent the direct assignment of SAP roles to end users because it is not typically the norm.

**Note**
Want to know more about SAP’s recommendation to directly assign the roles it provides? Head over to https://help.sap.com and enter “Solution Manager” in the search box, select the enter key and select SAP Solution Manager. Select your SAP Solution Manager version in the upper right, then scroll down to the Security section to read the Authorization Concept Security Guide. In this guide, SAP details why you should directly assign its roles.

**Standalone Security Roles**

The SAP composite roles provided include numerous single roles. We will highlight the functional types of single roles created by SAP because it is important to understand what is being assigned to your resources. In the event you decide to copy SAP composite and single roles into your namespace, this section will provide the necessary background information about what function each role type supports. Table 4.2 describes the single role types created by SAP.

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<th>Description</th>
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<td><strong>Infrastructure</strong></td>
<td>These roles contain basic authorizations to read from the various data sources in SAP Solution Manager. From reading the landscape management database to displaying business partners, this foundational role type is required to operate any function within SAP Solution Manager. As an example, the SAP_SUPPDESK_PROCESS_COMP composite role includes a SAP_SM_SL_DISPLAY single role that provides read access to landscape information.</td>
</tr>
<tr>
<td><strong>Core business</strong></td>
<td>Think of these roles as the job function roles. They provide tool-specific access for a specified tool! In the example of the SAP_SUPPDESK_PROCESS_COMP composite role, it includes a SAP_SUPPDESK_PROCESS single role, which provides access to incident management in SAP Solution Manager.</td>
</tr>
<tr>
<td><strong>Navigation</strong></td>
<td>These single roles provide access to the UI within SAP Solution Manager; multiple UIs are available. Roles beginning with SAP_SM_FIORI and SAP_SMWORK provide access to SAP Fiori launchpad groups and applications. Roles beginning with SAP_SM_CRM_UIU provide access to the UI for incident and change management. The SAP_SUPPDESK_PROCESS_COMP composite role contains the SAP_SMWORK_INCIDENT_MAN, SAP_SM_FIORI_LP_EMBEDDED, and SAP_SM_CRM_UIU_SOLMAN-PRO single roles, which provide access to all UIs required for incident management.</td>
</tr>
<tr>
<td><strong>SAP BW authorization</strong></td>
<td>Single roles beginning with SAP_SM_BI provide access to the reporting objects within SAP BW inside SAP Solution Manager. The SAP_SUPPDESK_PROCESS_COMP composite role includes the SAP_SM_BI_INCICMAN_REPORTING single role, which provides access to all operational and analytical reporting in incident management.</td>
</tr>
</tbody>
</table>

**Table 4.2 Overview of Role Types Provided by SAP as Part of Composite Roles**

**Important Terminology**

In this section, you will find the key terminology that SAP has developed over the years Solution Manager and the sizing of SAP systems. Any certified SAP Solution Manager administrator should be fully acquainted with the following terms:
Application lifecycle
The lifecycle of all applications is the same. The application lifecycle starts with a business requirement. This business requirement is usually very complex and requires a new application, if not multiple applications. This leads to the next step, the design phase. The solution must be designed to meet the business requirement. Once the design is complete, it is time to start building the solution, called the build and test phase. The application or solution now needs to be installed and tested to ensure it operates as the requirement and design say it should. Next is the deploy phase, also called the go-live. This is when the application or solution is deployed to the business for productive use. Once the system is up and running, the IT team needs to keep it that way. This is called the operate phase, in which you monitor for and resolve any issues that may come up with the solution. Finally, you move on to the optimize phase, in which you introduce changes or updates to the solution to make it better and run smoother.

Application lifecycle management
The management tools that exist within SAP Solution Manager or any application lifecycle management software or application in general are tools that support each phase of the complete application lifecycle.

Quick sizer
The online sizing tool provided by SAP to enable customers and partners to adequately consider all details for a specific type of system when planning the sizing and installation of an SAP system. This tool provides the total number of SAPs (CPU), the amount of memory required, and the disk space needed for the installation and use of the tool.

Database migration option (DMO)
This is an upgrade option within the Software Update Manager. This option executes the upgrade of a system and the database migration in a single step, simplifying the upgrade and eliminating the extra step of migrating to SAP HANA with the software provisioning manager after the upgrade.

Content activation
The content activation process has a preparation phase that is executed in SAP Solution Manager 7.1; the actual activation of that content happens immediately after the upgrade in SAP Solution Manager 7.2. This content activation is how SAP has enabled the transformation of old methods of things like storing business processes in solution documentation and activating ChaRM on managed systems into the new methods and capabilities of SAP Solution Manager 7.2.

User administration
With SAP Solution Manager 7.2, SAP has enhanced the user administration tool. This tool greatly simplifies the process for granting access to specific functional areas within SAP Solution Manager 7.2. The user administration tool allows for the automatic creation and assignment of SAP-delivered roles based on functional areas, as well as the updating and management of both internal system users in SAP Solution Manager itself and the system and remote function call users that exist on the managed systems.

Software Update Manager
A software update tool provided by SAP for the patching and upgrading of an SAP application. This tool exists within the set of Software Logistics Toolset applications.

Software provisioning manager
A software deployment tool provided by SAP for installing systems. It also performs major changes like dual-stack splits, database migrations, or system copies. This tool exists within the set of Software Logistics Toolset applications.

Portfolio to project
– Provides the ability to drive a business portfolio of projects by balancing business initiatives and the business value they provide while ensuring that IT capacity, skillset, and timelines are considered
– Improves the visibility of data to enable better decision-making
– Provides the ability to build a strategy to provide balance across all projects
– Provides roadmaps and KPIs to improve communication during project implementations

Requirements to deploy
– Enables customers to build what their business needs at the right time with a real outcome that the business can measure
– Supports the use of new agile methodologies, as well as the traditional development methodologies
– Provides a framework for the execution of a project and the service it requires
– Enables visibility into the quality, schedule, and cost of services delivered

Request to fulfill
– Provides the ability to catalog, request, and fulfill services
– Enables the IT organization to manage subscriptions and total cost of service, as well as manage and measure the fulfillments of those suppliers
– Provides the IT organization with tools to transition to a service broker model

**Detect to correct**
– Enables the IT organization to anticipate and resolve issues on production systems
– Unites the entire IT organization to enhance results and increase efficiency
– Identifies issues before the business is impacted
– Provides visibility from end to end across the entire set of SAP solutions

**Security composite roles**
A set of roles that are grouped together in a single security role. This single role references the other security roles assigned to it. Assigning a composite role means a user is assigned all the roles within the composite role.

**Scenario-based security composite roles**
SAP has provided a variety of scenario-based composite security roles. These composite roles are designed for different levels of access for a specific application lifecycle management tool, like ChaRM, application operations, or solution documentation. These roles greatly simplify the provisioning of access to end users seeking access to a specific application lifecycle management tool in SAP Solution Manager.

**Users in managed systems**
These are the SAP Solution Manager system users that are created in the managed systems while executing managed system configuration for a specific system.

**Users for configuration**
These are users that require access to configure a specific application lifecycle management tool within SAP Solution Manager. These are normally SAP Solution Manager experts that understand the tools they are configuring.

**End users in SAP Solution Manager client**
These are end users that need access to different application lifecycle management tools for functional use. SAP has predefined roles for each use case depending on the functional area.

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**Practice Questions**
In this section, you will find a list of practice questions that will help you understand which areas you need to study further.

1. Which of the following is NOT one of the four value chains?
   - A. Portfolio to project
   - B. Requirement to deploy
   - C. Request to deploy
   - D. Detect to correct

2. Which of the following is NOT one of the phases of a complete application lifecycle?
   - A. Build and test
   - B. Requirements
   - C. Develop
   - D. Design
   - E. Optimize

3. The standard migration path to SAP Solution Manager 7.2 running on SAP HANA is the only available option.
   - A. True
   - B. False

4. Which areas have SAP focused its attention on enhancing while designing the new SAP Solution Manager 7.2? Three answers are correct.
   - A. Process management
   - B. Cloud and hybrid
   - C. Data volume management
   - D. Agile innovation
5. The user administration tool is essentially just a guide written by SAP. All role creation is a manual process.
   - A. True
   - B. False

6. Which of the following application lifecycle management tools does not require the content activation process to upgrade to SAP Solution Manager 7.2?
   - A. ChaRM
   - B. Process management
   - C. Business process monitoring
   - D. System monitoring

7. The content activation guided procedure is a process of which primary activities? Three answers are correct.
   - A. Redefining the solutions and logical component groups
   - B. Selecting business process monitoring metrics to be converted
   - C. Defining the destination branches for the content within projects and solutions
   - D. Defining the scope of projects and solutions to be activated

8. Which of the following is NOT a consideration when sizing an SAP Solution Manager system?
   - A. Number of end users
   - B. Which application lifecycle management tools are to be implemented
   - C. Number of alerts to be activated in system monitoring
   - D. Number of managed systems to be connected to SAP Solution Manager

9. Which of the following tools is NOT an application lifecycle management tool in SAP Solution Manager?
   - A. Project management
   - B. Process management

10. Which of the following application lifecycle management tools are most greatly impacted by the upgrade to SAP Solution Manager 7.2?
    - A. Business process monitoring
    - B. Solution documentation
    - C. SAP Portfolio and Project Management
    - D. Test management
    - E. All of the above

11. Which tool enables the automatic creation of customer roles and assignment to users for a single SAP Solution Manager application lifecycle management tool?
    - A. Transaction PFCG
    - B. Access administration
    - C. User administration
    - D. Diagnostic agent administration

12. Which tools are required to perform the upgrade of SAP Solution Manager to 7.2? Two answers are correct.
    - A. Software Provisioning Manager
    - B. Software Patching Manager
    - C. Software Update Manager
    - D. Software Migration Manager

13. SAP provides many out-of-the-box composite roles to meet almost any access requirement across all application lifecycle management tools.
    - A. True
    - B. False
14. Which Software Upgrade Manager functionality is used by the simplified migration path to expedite the upgrade/migration to SAP HANA?

- A. Database migration option
- B. Database mitigation option
- C. Database movement option
- D. Minimum database migration options

15. What is the primary responsibility of SAP Solution Manager?

- A. Enable SAP Customers to better upgrade their SAP business solutions
- B. Enable SAP Customers to better manage the lifecycle of their SAP business solutions
- C. Enable SAP Customers to better manage changes across their SAP business solutions
- D. Enable SAP Customers to better utilize their SAP licensing agreements

16. Besides preserving content, what is the next primary consideration for deciding to upgrade or perform a fresh installation of SAP Solution Manager?

- A. Complexity of system monitoring configuration
- B. Complexity of ChaRM configuration
- C. Amount of rework to be done, based on the amount of configuration completed and number of managed systems connected to SAP Solution Manager
- D. Number of SAP EarlyWatch Alerts generated

17. Upgrading directly from SAP Solution Manager 7.0 to 7.2 is supported by SAP using the DMO.

- A. True
- B. False

18. Beyond the user administration tool, what other tool has SAP provided to understand which SAP roles to assign to users in SAP Solution Manager?

- A. SAP blogs
- B. SAP security guides

Practice Question Answers and Explanations

This section provides in-depth explanations for the answers to each of the practice questions. Please be sure you fully understand the answers to any of the questions that you answered incorrectly. The practice questions are designed to test your knowledge on all the key areas of this section of the certification test.
1. Correct Answer: C
   Request to deploy is not one of the key value chains. The fourth one is request to fulfill. These are the four value chains that SAP has developed to describe SAP Solution Manager capabilities.

2. Correct Answer: C
   Develop is not one of the phases of the lifecycle of an application. The lifecycle phases of an application are higher level, describing the management of the application.

3. Correct Answer: B
   False. SAP also provides DMO to upgrade and migrate to SAP HANA in a single step. The DMO is ideal for organizations that wish to migrate to SAP HANA with only a single downtime window.

Note
There are no true/false questions in the actual certification exam. We use them here to help you determine if you completely understand the concepts in this chapter.

4. Correct Answers: A, B, D
   SAP has spent considerable time enhancing SAP Solution Manager to provide real business value by enhancing the functional application lifecycle management tools. Data volume management is not a functional tool.

5. Correct Answer: B
   False. With SAP Solution Manager 7.2, SAP has enhanced the user administration tool. This tool greatly simplifies the process of granting access to specific functional areas within SAP Solution Manager 7.2. The user administration tool allows for the automatic creation and assignment of SAP-delivered roles based on functional area, as well as the updating and management of both the internal system users on SAP Solution Manager itself and the system and remote function call users that exist on the managed systems.

6. Correct Answer: D
   System monitoring is not a tool that requires the execution of content activation for an upgrade to SAP Solution Manager 7.2. Only the notification settings need to be preserved.

7. Correct Answers: A, C, D
   The activation and conversation of business process monitoring alerts has its own process, outside of the prepare activation guided procedure. But you do select projects that contain the content for business process monitoring.

8. Correct Answer: C
   The number of active metrics does technically impact the size of SAP Solution Manager, but the sizing tool does not go down to that level of detail.

9. Correct Answer: D
   Technical monitoring has been rebranded as application operations. This is only a rebranding; the tool itself has not changed drastically from SAP Solution Manager 7.1 to 7.2.

10. Correct Answer: E
    All these application lifecycle management tools are greatly impacted by the upgrade, more so than any other tools. This is due to their functional nature and how SAP has redesigned them within SAP Solution Manager 7.2.

11. Correct Answer: C
    The user administration tool is new to SAP Solution Manager 7.2 and is used for creating roles and assigning them to users. This is meant to supplement the security guides that SAP still provides on its SAP Help website.

12. Correct Answers: A, C
    Software Update Manager is used to upgrade the applications, and software provisioning manager is used to split the ABAP and Java stacks into separate systems.

13. Correct Answer: A
    True. SAP provides many composite roles out of the box without any security development required, which many customers use rather than creating new custom roles.

14. Correct Answer: A
    The database migration option is used, which is available for any type of SAP system upgrade that requires a simultaneous database migration and upgrade.

15. Correct Answer: B
    At its core, SAP Solution Manager is meant to support the entire lifecycle of the solutions that SAP provides to business. It is the beating heart of every SAP system landscape.

16. Correct Answer: C
    Beyond content, you must also consider the time and effort spent to configure your current SAP Solution Manager landscape. With an upgrade, the configuration in Transaction SOLMAN_SETUP essentially will be complete, with only a few areas that need to be re-executed. Considering the high number of man hours spent fully configuring a two-system landscape (development and pro-
duction) and connecting it to many managed systems, this fact alone may be reason enough to venture down the path of an upgrade.

17. Correct Answer: B
False. Currently, SAP does not support the upgrade of SAP Solution Manager 7.0 to 7.2. You must upgrade 7.0 to 7.1, and then you can upgrade to 7.2.

18. Correct Answer: B
The SAP security guide provides all the same information as the user administration tool and more. It has complete details—even more details than the user administration tool.

19. Correct Answer: C
In the user administration tool, the Users in Managed Systems tab is designed to manage all SAP Solution Manager system users in managed systems en masse. This can greatly simplify the management of these users.

20. Correct Answers: B, C
Prepare activation is the first step of content activation. If all content isn’t properly corrected and prepared, the actual content activation in 7.2 will fail and content will be lost.

21. Correct Answer: C
The simplified migration option using DMO in Software Upgrade Manager will upgrade the system and migrate the ABAP system to the SAP HANA database. The Java system will stay on the current database.

Takeaway
This chapter is meant to provide detailed information on the overall purpose of SAP Solution Manager and why it is important to every SAP customer. SAP Solution Manager truly is the beating heart of an SAP business solution ecosystem, supporting the entire lifecycle of every system within it. Understanding how it has been enhanced in SAP Solution Manager 7.2 and how to handle the impact of the upgrading SAP Solution Manager is a key skill for all SAP Solution Manager certified consultants. Understanding these key points will ensure the successful passing of the certification exam.

Summary
In conclusion, the application lifecycle management that SAP Solution Manager provides has been enhanced and refined over the years. Its capabilities span a variety of lifecycle management areas, and it is essential for an SAP Solution Manager consultant to be fluent in every aspect. This is not an easy task. Being able to understand how SAP Solution Manager can support the business and the IT organization is something few people have the time to fully grasp in detail. Many people have a high-level understanding of how it all works, but to fully understand the inner workings of all the application lifecycle management tools and how they work together to support an SAP customer is truly something only few people achieve. This is where the SAP Certification exam comes in, to prove they have done it.
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Jereme Swoboda is a senior SAP Solution Manager architect and practice lead at NIMBL. With more than seven continuous years of SAP Solution Manager experience, Jereme excels at navigating complex solution manager solutions from application operations, ChaRM, data volume management, custom code management, IT service management, business process operations to solution documentation.

Widely considered an authority on the integration of/and upgrade to SAP Solution Manager 7.2, Jereme has authored multiple SAP PRESS books on the subject, routinely presents at conferences nationwide, and hosts multiple webinars driving thought leadership to the SAP community. He’s passionate about providing customers with transparent insight on the functionality and tangible business value of SAP Solution Manager.