SAP System Landscape Copy
for SAP NetWeaver and mySAP Solutions

Best Practice for Solution Management

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The newest version of this Best Practice can always be
obtained through the SAP Solution Manager

Contents

Applicability, Goals, and Requirements

To ensure that this Best Practice is the one you need, consider the following goals and requirements.

Goal of Using this Service

This Best Practice provides the general information for copying an SAP System Landscape composed of SAP NetWeaver and other mySAP Solutions. It provides the background information for planning the system copy of an SAP landscape and lists the required steps for executing the copy process. Any additional information that is required to execute these steps for a specific SAP solution or component is provided in complementary notes available from SAP Service Marketplace.

Applicability

This Best Practice applies to copying complete components of an SAP system landscape (for example copy of a complete SAP Web Application Server (SAP WebAS) based system). It does not deal with the procedure or the post-customizing of a client copy within or between SAP components.

Alternative Practices

SAP's optimization service "SAP Continuity Management" offers support with planning a system copy strategy for SAP system landscapes. For more information please see the SAP Service Catalog at http://service.sap.com/servicecat.

Staff and Skills Requirements

To apply this Best Practice, you must have experience in copying systems and be familiar with the administration of the operating system, the database, the ABAP Dictionary and the SAP middleware components used by your SAP solutions.

A technical consultant who is specifically certified for system copy should carry out the system copy procedure onsite. This holds irrespective of whether the system to be migrated is a development system, a test system, or a production system. This ensures that sufficient know-how is available to handle the complexity of the procedure.

You should have a contact person available onsite who can process messages on SAP Service Marketplace in case of problems with system landscape copy.

Duration and Timing

When copying or refreshing a system containing production data, choose a well-defined starting time for executing the copy. The following things should be considered:
- System landscape copy may require downtime for the production (source) systems (depending on the copy strategy selected)
- The target landscape will not be available until the complete copy process is finished
- When refreshing an existing target landscape, data in the target landscape will be lost. This affects any work or projects done on the target landscape.
- Since many different projects or groups may be working on the target landscape, a good coordination is required to find an acceptable time for doing a refresh.

How to Use this Best Practice

This Best Practice provides the general information for copying an SAP System Landscape (or rather: copying all components of an SAP System Landscape). It depicts the copy procedure, which is common to all SAP solutions. In addition to these common tasks, specific tasks may be required to copy a specific SAP solution and all its components. This solution-specific information is provided in complementary SAP notes, in the following called [*SAP System Landscape Copy Notes*], which will be available for each SAP solution.

An overview of currently available solution-specific [*SAP System Landscape Copy Notes*] can be found in SAP note 885343, which also contains supplementary information like recent updates and corrections to this Best Practice.

In addition to the above documents you will also require the standard SAP Guide "Homogeneous and Heterogeneous System Copy for SAP Systems Based on <SAP release>" (in the following called [System Copy Guide]) to get information on copying SAP WebAS-based components. This documentation was written on the basis of [System Copy Guide] for WebAS version 6.40 SR1 and for NetWeaver 2004s. For other releases of SAP Web Application Server or SAP Basis, slight differences may occur for some detail descriptions.

For copying SAP Solutions which deploy the JAVA part of SAP WebAS on release 6.40 (JAVA system or JAVA Add-in), you also need to refer to the SAP Guide "Homogeneous and Heterogeneous System Copy for SAP Systems Based on SAP Web Application Server JAVA". When referring specifically to this guide, we use the reference [System Copy Guide - JAVA for 6.40]. For NetWeaver 2004s, system copy for the JAVA part is included in the [System Copy Guide].

This Best Practice document consists of two main parts: a planning section and a description of the practical steps.

The planning section provides the background information you need to design a copy strategy suitable for your environment. It describes the different strategies and reasons for doing a system copy and discusses the different technologies available for doing the copy. It also discusses the potential risks that may be involved with different copy strategies.

The practical part starts with an overview of the general phases and steps that are required for executing the copy process and then provides a detailed description of each individual step.

Best Practice Procedure and Verification

Planning the System Landscape Copy

Reasons for Copying SAP System Landscapes

SAP customers use clones of their production systems for various purposes: Upgrades should first be performed in a test system. Software development and modifications performed in a development system should first be tested in a quality assurance system before being transported to the production system. This helps to identify any problems that may impact the production system. Integration testing is used to verify the interaction of processes and components in more complex system landscapes before putting new functionality into operations.

For example, using system copies, you can use system copy to set up a landscape for:

        a) Development

        b) Quality assurance tests

        c) Integration tests

        d) Upgrade Tests

        e) Backup and Restore Tests

        f) Training Systems

        g) Demonstration Systems

        h) Operating system migration

        i) Database migration

        j) Change of hardware

        k) Unicode conversion

While reasons a) - g) on this list imply the creation of a cloned system or system landscape (where the source systems are duplicated), the last four items h) – k) refer to changes on the production environment. In this latter case, the production landscape is not duplicated but moved to another hardware or software environment instead. This procedure is also included in the terms "SAP System Copy" or "SAP System Landscape Copy" although it does not deliver a second instance of the system or system landscape. Unless noted otherwise, when speaking of system copy we will usually refer to a "real" second copy created from a productive source system.

Instead of using the standard procedures for installing, setting up, and customizing SAP systems, the SAP system copy procedure can be used to create a new target system landscape or to refresh the data of an already existing target system landscape. The advantage of a system copy is that it enables you to perform many system setup activities at once, because the whole system environment with its customizing, support packages, modifications, corrections, plug-ins and other technical settings are all copied to the target system (instead of being manually recreated). After the copy, these settings need only to be adjusted.

Challenges when Copying an SAP System Landscape

SAP implementations today usually exploit the capabilities of several different SAP solutions using different SAP systems and components, all installed on separate servers. Business data is distributed among these components and thus imposing new requirements on system copy procedures. Providing cross-component data consistency in the target landscape is a topic to consider when planning for system landscape copies.

From that point of view, the copy of an SAP System Landscape is different from a standard SAP R/3 system copy. In addition to the standard copy tasks for SAP R/3 or SAP WebAS, each SAP solution may require specific tasks to be executed during system copy. These need to be incorporated when planning a landscape copy strategy for a specific customer system landscape.

When copying a landscape of connected systems, it is vital to protect the source systems from any damage they may be exposed to from the target systems. The most illustrative example is the system connections for exchanging messages between the systems. If a target system still has a connection to any of the source systems, it is possible that some test activity in the target system will trigger messages that will go into production and do incalculable damage to the production data. Thus, most importantly, all system connections must be carefully adjusted in the complete target environment.

So when defining a copy strategy for an SAP system landscape, the following questions arise:

- Which components make up my SAP solution?

- Which systems are to be copied, which systems are required in the target landscape?

- How can each individual component be provided in the target landscape, is a system copy required or is an installation and configuration sufficient?

- What are the consistency requirements of the target landscape?

- Which copy technology is adequate to achieve these consistency requirements? Which components need to be copied together?

- How can I reduce or avoid the impact the system copy has on productive operation?

- How do I copy a "live" system landscape that is constantly exchanging messages? How do I handle data that is in the message queues?

- How can I protect the production environment from any possible damage?

- What parameters do I have to change in the target environment?

- What interfaces do the components have, how do I handle them?

The following sections will discuss these questions in more detail to provide the required information to determine on a suitable copy strategy.

Normally, to perform a system landscape copy you should perform the following steps:

- Read the planning section of this Best Practice

- Define the scope of your system landscape to be copied

- Define the requirements and potential risks in your particular case and choose the copy procedure to be implemented

- If required, register to get a migration key from SAP for changing the operating system or database platform

- Before starting a system copy, create a detailed project plan describing your system landscape copy and including the systems and hardware involved, methods of copy, milestones, test procedures for important transactions, people responsible for each phase, and so on

- Perform the practical steps of the system landscape copy in accordance with your project plan and the copy procedure described in this document

Define Scope of System Landscape

Copying SAP NetWeaver or a mySAP solution often requires more than just copying a single SAP Web Application Server and its database. To plan the copy process, you need a clear understanding what components make up your landscape and whether you also need them in your target landscape. This usually depends on the designated purpose of the target landscape. For local functionality testing, for example of SAP BW info cubes and SAP BW reporting tools, it may be sufficient to have

an isolated copy of the production SAP BW system. Whereas, for example, for extended integration testing before go-live of complex business processes it is mandatory to provide a test landscape of multiple components and to make sure that data consistency between these components is given to provide sufficient test accuracy.

So if you require copying multiple components of an SAP system landscape, you need to consider the dependencies (data exchange) between different components and decide what level of data consistency is required between the components of the target landscape. This again is dictated by the application department's demands. "Strict consistency" needs to make sure that the copy procedure does not introduce any new inconsistencies that were not present in the source landscape. Only some selected copy methodologies can ensure this strict consistency. But it may as well be sufficient for a test landscape to reflect a "nearly consistent" image of the production landscape where users have to keep in mind that some inconsistencies might have been caused by the copy procedure itself. If the system usage does not rely on dependencies between the systems, you might not have any consistency demands and could copy the components separately.

The above decisions influence what components of a landscape need to be copied together to achieve the required level of consistency in the target landscape.

To decide on the appropriate copy method, you then need to know what type of data these components are using.

- Components without application data just require to be installed once during an initial copy, which means the initial creation of a new target landscape. For a refresh of an already existing landscape there generally is no further action required for this type of components.

- Components with application data need to be installed during initial copy. The data can be provided to a non-productive target landscape by two means:

  o Data copy

    This is the usual method for SAP WebAS based components.

  o Data initialization

    This is the usual method for components which only hold replicated data from other components. The initialization is done at a later time, when the copy of the other "main" components is finished.

Copy Scenarios

As mentioned before, the SAP system copy procedure applies both for creating a non-productive clone of a productive landscape and for moving or migrating the production landscape itself to another platform. When creating a non-productive system (NPS) landscape, we further have to distinguish if the target NPS landscape has to be newly installed or if the landscape already exists and only its data is to be refreshed by the most current data from production. For each of these different demands, different actions may be required for executing the copy process. In order to incorporate these distinctions into the copy process described below, we introduce different "copy scenarios".

- *PRD → PRD*
  The target landscape will replace the previous production (source) landscape and will become the new production landscape. This applies for example if the operating system, the database system or some main hardware components of a production system are to be changed. Using this scenario you would typically only copy one component of a system landscape at a time and not the complete landscape in one. Since the system to be copied must be down, data consistency is no issue. Similar necessities as with a complete landscape copy need to be considered, for example regarding maintenance of system connections.

- *PRD → NPS*
  The production system landscape is copied (cloned) onto a non-productive landscape for example for creating a test environment.

- *New Installation*
  The target NPS landscape does not exist yet and needs to be installed during the copy process.

- ***Refresh***
  The target NPS landscape does already exist and only the data shall be refreshed.

Another distinction comes from the level of risk mitigation versus impact on productive operation during the copy process. This leads to the following copy scenarios

- ***Minimum Risk***
  The copy procedure is mainly targeted at reducing any possible risks that may impact integrity of any systems of the production source landscape. Various precautions can be taken that could help to prevent messages from the target landscape reaching a production system.

  Measures that can be taken include

  - offline copy, which means taking the source systems offline while doing the technical copy and/or while performing the final cleanup actions on the target systems

  - stop of productive operations on source system

  - locking of message queues on the source systems, so at startup, the queues on the target systems will be disabled for message processing

  - disabling RFC destinations already on the source systems, so the target systems will start up with invalid communication destinations

  - copy with empty message queues on the source systems. This eliminates the need for processing pending messages on the target systems which may impose some risks.

  Although this scenario offers different alternatives for risk mitigation, not all possibilities for reducing the risk may be desirable in each individual case. For further discussion of the risks involved when doing without different precaution steps see section "Potential Risks".

- ***Minimum Impact***
  The copy procedure aims to reduce any impact the copy process may have on productive operation in the source systems. This procedure also prevents impacts to the source systems' integrity but sticks to only the most important actions without taking all conceivable precautions. With this procedure the danger of errors is higher if the vital steps are not performed with extreme caution. This scenario should only be performed if you have a very high level of experience and understanding of the dependencies and implications of the complete landscape and copy process.

These above copy scenarios are not exclusive but rather need to be combined to form your individual copy strategy. For example you may want to refresh an existing NPS landscape using online copy procedures with minimum impact on productive operation. This means that you combine the copy scenarios "*PRD → NPS*", "*Refresh*" and "*Minimum Impact*". Concerning the measures to be executed, the distinction between some scenarios may not even be fixed. For example you may come up with a strategy located between "*Minimum Risk*" and "*Minimum Impact*" by executing only some steps of the "*Minimum Risk*" scenario while skipping others.

Depending on the target environment of the copy, we further need to distinguish between a copy to a "compatible" environment or an environment where operating system or database are different.

- ***Homogeneous System Copy***
  Operating system and database system are the same for both source and target systems.

- ***Heterogeneous System Copy***
  The operating system or database system of the target system is different from the source system (also called OS/DB Migration).

  If you want to change the operating system or the database system during the copy of a productive SAP WebAS based system, you need to order and use the **SAP OS/DB Migration Service**. This service is also available for SAP NetWeaver and mySAP solutions.

  Heterogeneous system copy requires a **migration key** that will be provided by SAP. The copy must be done offline and allows using only the SAP R3load tool (see copy technologies below). OS/DB Migration must be performed by consultants who have been specifically trained for these types of migrations.

For information concerning OS/DB migration, see the SAP OS/DB Migration page in SAP Service Marketplace (http://service.sap.com/osdbmigration).

Since the copy procedure is the same for homogeneous and heterogeneous system copy, we do not further distinguish both in the process descriptions to follow.

System Copy Procedure – Main Phases

The actual system copy process can be divided into six main phases. These are:

1. **Preliminary tasks:** Plan and prepare the system copy procedure. Check that all required information is available and that the copy strategy is complete. Prepare or check the target hardware and software environment.

2. **Prepare the target environment for the system copy**: This phase is mainly required for refresh, when the target landscape already exists and shall be provided with new data from the source (production) landscape. It includes saving configurations and data from the target systems and preparing them for the refresh.

3. **Prepare the source systems for the system copy**: Perform general and technical preparations in the source systems in accordance with your selected copy strategy. The amount of actions required here depends on the copy scenario chosen. The copy scenario also determines the impact (and most of all the downtime) imposed on the source landscape.

4. **Perform the system copy**: Run a homogeneous or heterogeneous system copy of the source SAP WebAS systems using one of the copy technologies described below.

5. **Final activities on source landscape**: Depending on the selected copy scenario the production systems must be put back to their original state so productive operations can be resumed. This phase may be delayed until after phase 6 to reduce any possible risks to an absolute minimum.

6. **Final activities on target landscape**: In the newly copied systems, subsequent technical actions and post-installation steps must be performed -- most importantly to prevent the target environment from interfering with the production systems. This includes changing system connections and other cleanup activities but also renaming and reconfiguring to meet the requirements of the target landscape. Installation of additional components that are not copied is usually done in this phase as well.

More details on the actual steps to be executed during each phase are provided in section 'System Landscape Copy Procedure' below.

> The phases 2 – 6 must be done in parallel for all components of the landscape that are to be copied together.
>
> For every component you also need to observe the information from the solution-specific [*SAP System Landscape Copy Notes*].

Copy Technologies

The actual copy of a component (the component's data) can be done using different tools or technologies.

R3load

R3load is a tool provided by SAP to export and import the database of an SAP system in a database-independent format. R3load is integrated with the SAP installation tool SAPInst.

SAPInst is first run on the source system to export the source database (option "Export ABAP database Content"). On the target host SAPInst is run to install the target system and import the previously exported data from the source system (using installation option "System Copy/Migration").

R3load requires to shutdown the source SAP WebAS while doing the export, since otherwise no consistent state can be exported. R3load can only export database objects or structural information known to the ABAP dictionary. R3load takes care of renaming the SID and database schema while doing the system copy.

R3load only exports the ABAP part of an SAP WebAS installation. For JAVA export, see the Jload tool below.

For more information on R3load see [System Copy Guide].

To optimize the system copy and reduce downtime using R3load, several additional tools are available, like Incremental Migration (see below), Migration Monitor (see [System Copy Guide]), Time Analyzer (see SAP note 784118), Package Splitter (see SAP note 784118) and Distribution Monitor (see SAP note 855772). Also see "http://service.sap.com/systemcopy → Optimization".

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> **Using the R3load procedure is mandatory for *Heterogeneous System Copy* or *Unicode Conversion*. For heterogeneous system copy *of a productive system*, the SAP OS/DB Migration Check is mandatory, see** http://service.sap.com/osdbmigration.

IMIG

The Incremental Migration (IMIG) is an extension to the R3load procedure that aims at reducing the production downtime by doing part of the data export for large tables during uptime. It is thus applicable for very large systems or large systems with few very large tables when downtime with conventional procedures is not acceptable.

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> **IMIG has not been generally released yet and can only be performed by selected consultants. It is not available for all SAP solutions. See SAP note 693168 or** http://service.sap.com/systemcopy **for more information.**

Jload

Jload is a tool provided by SAP to export and import the JAVA components of an SAP WebAS system. Jload is available starting with SAP WebAS 6.40 and SAP NetWeaver 2004s. Jload works for both JAVA system and JAVA Add-in installations of SAP WebAS. It exports the JAVA database in a database-independent format as well as the configuration and file system components of an SAP WebAS JAVA system (the "JAVA central instance"). Jload is integrated with the SAP installation tool SAPInst.

SAPInst is first run on the source system to export the JAVA source system. On the target host SAPInst is run to install the JAVA target system and import the previously exported data from the JAVA source system.

For copying an SAP WebAS ABAP + JAVA (Java Add-in), the ABAP and JAVA export with SAPInst can be combined. The order and exact procedure depends on the actual release of the WebAS system as described below.

See [System Copy Guide - JAVA for 6.40] (WebAS 6.40) or [System Copy Guide] (NetWeaver 2004s) for more information on the Jload procedure.

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Please see SAP note 785848 respectively 870863 for possible restrictions and for a list of JAVA components currently released for system copy with Jload.

Copy of WebAS - JAVA components

If not using the Jload tool to copy the JAVA database of an SAP WebAS JAVA or SAP WebAS ABAP+JAVA system, but one of the methods described below (e.g. database restore), there is still some JAVA-specific content in the filesystem which needs to be copied as well, both for *New Installation* and *Refresh*. With WebAS 6.40 and NetWeaver 2004s, the SAPInst tool provides the required functionality to export this filesystem content of a JAVA system (the JAVA central instance) and import it into the target system. When choosing the SAPInst option "Copy the database by using database tools", SAPInst will skip the Jload database export and only export the source JAVA central instance required to install or refresh the target JAVA central instance.

Database Restore

A system copy can be done by restoring an offline or online backup of the source database onto the target system. The restore procedure must allow restoring the database with a different SID unless the target system shall have the same SID as the production system.

The target system must already be installed before doing the restore and you must make sure that all database and SAP profiles for the target system are correct. Especially when using an online backup, analyze the risks given for copy scenario *Minimum Impact*.

The database restore method is supported by SAPInst for a *New Installation* of the target system. See [System Copy Guide] for more information on the Database Restore method for the different database systems.

Database-specific Methods

In addition to the database restore method, other database-specific tools or procedures may be available. These methods include for example copy of the database files or special tools for unloading a source database and loading the data into a target database.

See [System Copy Guide] for more information on such SAP supported database-specific methods.

Split-Mirror

Split-mirror technology allows creating a copy of the production disk volumes at storage system level. An additional set of storage volumes to be used for the target system are synchronized with the production disks. At a suitable time, this mirrored relation is discontinued (the mirror is split), causing the target volumes to contain a point-in-time image of the source system. After connecting the target host to these volumes and doing the final activities required for the target environment, the target system can be brought up.

Split mirror technology allows for non-impact online copy and very fast refresh of an already existing target system. All disk volumes can quickly be refreshed using a storage-based local or remote mirroring technology. With the appropriate experience, it may also be possible to copy the complete SAP WebAS and database instance (software) using split-mirror so it may not even be necessary to install the target systems first. Please note that this requires a comprehensive understanding of the implications and the necessary adjustment measures.

Because of its small impact and small runtime, Split-mirror is a solution especially suited to copy large systems where other copy technologies cannot be accepted because of long downtime or runtime requirements.

When combining split-mirror technology with Consistency Technology offered by various storage system vendors, it becomes possible to even create a copy of multiple systems or of a complete system landscape during online operation. Thanks to SAP's fault-tolerant, stateful messaging technology used for data exchange between systems (SAP asynchronous RFC and SAP XI

messaging protocols), consistency technology will provide a data consistent image of the landscape from an application point-of-view.

For more information on split-mirror copy see http://service.sap.com/split-mirror.
For more information on Consistency Technology see http://service.sap.com/atg → Backup & Restore → Federated Backup.

Copy of non-WebAS components

For copying non-WebAS based components no SAP copy tools are available. Such components usually are installed newly in the target landscape.

For non-WebAS based components that hold data of their own (like SAP liveCache), the data can either be initialized after the copy of the main SAP WebAS based components (like SAP APO) or it can be copied in parallel to the other systems using an appropriate technology (e.g. database copy). What option is applicable for a specific component used in an SAP solution is described in the solution-specific [*SAP System Landscape Copy Notes*].

Potential Risks

Depending on the copy scenario or the copy technology to be used, different risks may be implied. Make sure that you consider these risks when designing your landscape copy strategy and that you have answers how to deal with them.

Risk 1: Avoid interactions with productive environment

After the system copy, the new target systems must <u>not</u> be able to connect to the production systems. Otherwise, at the first system startup, data might be transferred automatically to the production system, thus destroying the systems integrity and making the production data inconsistent.

The following things are critical concerning a clean separation of source and target environment and must be absolutely resolved on the target environment before bringing the target systems to operation:

- Disable <u>all</u> interfaces pointing to any components of the production landscape

  This is vital to prevent any communication or data exchange of the target systems from reaching the source systems. All interfaces of the systems need to be checked and adapted, including interfaces to the "real" world to prevent the systems from sending as if they were productive.

  Possible interfaces of SAP systems that need to be checked and adapted are

  > *RFC and R/3 connections, HTTP, R/2 connections, CPIC, File, Batch input, DB links, registered programs, adapters, archive link, SAP phone, SAP connect, email*

- Adapt transport settings (TMS)

  This is vital to prevent any objects reaching the source systems via incorrect transport routes.

- Adapt NFS mounts

  This is to prevent the target systems from unintentionally accessing or writing NFS mounts of the production environment.

- Check batch jobs

  This must prevent that any batch jobs in the target systems trigger production-like activities.

- Adapt printers, check print jobs

  This must prevent the target system from creating output on productive printers which could not be distinguished from real production print output.

- Modify users and authorizations

  To prevent production users from accidentally logging on and working on the target systems, we recommend using different users in an NPS landscape.

We also recommend using RFC users in NPS landscape that are different from RFC users used in production. This can serve as additional protection from illegal execution of messages in the wrong landscape.

- Adapt logon groups and application servers

    This must prevent the message server of a target system from routing requests to application servers of the productive system.

- Check external commands

    This must prevent a target system from calling operating system commands intended only for a production system.

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> **All these actions should be done before or immediately after starting a target system.**
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> **If you cannot make absolutely sure that the production environment will be unaffected, we recommend separating the network environments of source and target systems.**

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> **SAPInst automatically starts up the target SAP system during installation.**
>
> **If this imposes incalculable risks to your source environment due to the copy scenario chosen, you should consider taking additional precautions or choosing another copy scenario (at least for the initial installation of the target system).**

To disable any automatic server connection before you are able to do the above cleanup tasks, you should consider separating the network environment of source and target landscapes e.g. by using one of the following methods:

- Install the target landscape in its own network environment.

- Deactivate the network routes between the target servers and the production servers.

- Prohibit the connections within the SAProuter (see SAP Note 30289).

- Remove the new server from the Name Server service (DNS / WINS) and delete entries for the source systems from the hosts / lmhosts file, to prevent any network connection to the source system.

Risk 2: Online Copy

Online copy means performing the system copy without taking the source systems out of operation. Online copy is possible by restoring an online backup of the source systems or by using split-mirror technology.

Online copy imposes special risks because you have no possibility of already taking some precautions in the source systems before the copy that aim to prevent data exchange being triggered by the newly copied target system. Using online copy you cannot for example disable RFC destinations or lock message queues beforehand in the source systems. It is also not possible to empty message queues. Since the source systems stay online, the target systems could initiate some interactions with the source environment right after startup and thus destroy the source systems integrity.

So using online copy requires careful preparations for avoiding any such interactions at startup of the target systems. In addition to the measures described under "Risk 1", any possible measures should

be taken that can prevent SAP processes from running unintentionally in the target systems. On the target systems you can:

- Prevent automatic start of batch jobs so these cannot trigger any unintended activities.

- Disable unintentional user logon or user activity by locking the system and/or by locking SAP users.

- Disable system connections / RFC destinations per SQL statement directly on the database, before starting the SAP WebAS target system. This step can help to prevent any messages from being transferred from the target to the source environment. The actual adjustment of the destinations to their final values (the real servers of the target environment) can be done later using the official SAP tools.

Online copy for filesystem components of a system (e.g. the JAVA central instance) bears the risk of inconsistent files and inconsistent data which may leave the copy unusable!

Risk 3: Changing the Logical System Names

In any system landscape where data is distributed and exchanged between different systems, there is a potential risk when changing the configuration parameters responsible for data exchange. These parameters include RFC destination, host names, and logical system names. Among these parameters, changing the logical system names might have the strongest impact on a systems internal integrity and its ability to communicate.

Definition of logical systems

A logical system is an application system in which the applications work together in a common database. In SAP terms, a logical system is a client in the database of one system of an SAP landscape. A logical system can be for example a client in an SAP R/3 system, a client in an SAP CRM system or even a non-SAP system. Messages are exchanged between logical systems.

To identify a system as communication partner, participating systems in a distributed environment must each have a unique ID, the logical system name. This name is assigned explicitly to one client in an SAP System.

A logical system may be compared with an address on a letter. To ensure that data is sent to the correct recipient (or to the correct address), logical system names must be unique among the systems belonging to an SAP landscape exchanging data.

Possible issues when changing logical system names

To change a logical system name that is already used or defined in a system, transaction BDLS can be used. This program searches all relevant tables and converts the corresponding entries referring to that logical system name. But changing logical system names bears the risk of some data in unknown tables not being converted by BDLS. This would lead to unexpected data inconsistency or improper application work. The results are unpredictable and may have a big impact on business processes.

Transaction BDLS dynamically identifies these relevant tables by certain domains (LOGSYS and EDI_PARNUM). But if some application uses logical system names within tables that do not reference to these standard domains, the data cannot be converted by BDLS. Such data can also not be converted if some references to logical systems are saved as part of fields in cluster or pool tables. For SAP standard solutions, such critical tables should be described in the [*SAP System Landscape Copy Notes*]. A possible risk mostly remains for customer-owned developments.

Another issue when changing logical system names is the generally long runtime of transaction BDLS. This extends the duration of the system copy procedure and thus the unavailability of the systems.

Is it necessary to change the logical system names?

Because of the two reasons mentioned above (long runtime of transaction BDLS and possible inconsistencies), it may be desirable, to avoid the renaming of logical systems during system copy.

Whether logical systems names need to be changed at all after a system copy depends on the type of the target system:

Scenario "*PRD → PRD*"

The main requirement for the system copy procedure is that the new production system is identical to the old one. For communication to work properly after the system copy, the new production system must have the same logical system names as before, a renaming is unnecessary.

Scenario "*PRD → NPS*"

From a purely technical point-of-view, after a system copy it is sufficient to adapt all RFC destinations so that there is no longer a connection to the original system landscape. Messages to an "old" logical system will then be routed to the new server given in the RFC destination. On the other hand, customers may want to rename the logical system names in their NPS landscape because these often include the SID of the production system.

So generally, renaming of logical systems can be avoided by using non-unique logical system names throughout a landscape of production, quality assurance and development systems. To prevent any confusion in that case, the logical system names should not include the SID in their names.

But whether it is possible to use non-unique logical system names requires careful evaluation since some central components of an SAP system landscape like SAP Central User Administration or SAP Solution Manager do not only connect to the production landscape but also to quality assurance and development systems. For these systems, different logical system names may be mandatory and the renaming during system copy cannot be avoided.

Conclusion

- **Never change the logical system names in production systems!**

- For non-production systems, it may be possible to avoid the renaming of logical systems by using non-unique logical system names.

Risk 4: System Copy with Nonempty Message Queues

When allowing production downtime for the system copy (scenario "*Minimum Risk*"), one could try to empty the message queues by stopping all system activity and suspending all external interfaces some time before the copy. If it was thus possible to prevent new messages from reaching the systems to be copied, it would be possible to wait until all message queue entries are processed. This ideal situation, where all queues would be fully processed and contain no entries when doing the copy will usually not be achievable in reality. Even with offline copy, this could extend downtime beyond the tolerated limits. For example, there may be a high load in the system 24 by 7 and it may take too long for all the queues to be fully processed. So to minimize downtime you may need to copy the systems with entries in the queues and process them after the system copy.

Also with scenario "*Minimum Impact*", stopping the message queues in production would be too restrictive.

If the queues are not empty when doing the copy, they will contain valid data in the target systems after the copy. Processing these queues will be important for application data consistency in the target landscape (also see the discussion of data consistency in "Risk 5").

A potential problem arises for such message from before the system copy if the logical system names need to be changed after the system copy. Queue entries often contain a reference to the old logical system names as a part of their fields. If the logical system names are changed, these entries can no longer be processed in the target landscape. This would lead to data loss or inconsistencies. Currently, no automatic tools or methods are available that can process entries in the queues after changing logical system names. So the question of how to proceed in case there are some entries in the outbound or inbound queues before system copy is critical.

Let us consider the different copy scenarios from above:

Scenario "*PRD → PRD*"

In this case, because the logical system names are not changed after the system copy, the newly copied systems are identical to the source ones and the queues can be processed regularly after system startup.

Scenario "*PRD → NPS*"

In this case, to process the queues, the old logical system names are required. A possible workaround is to initially start the newly copied systems with the old (unchanged) logical system names. After adjusting the RFC destinations and starting the inbound and outbound queues, these messages can be processed since there are no differences between source and target systems from the communication point of view. After all entries have been processed successfully, the logical system names can be changed. Since the target systems are not released to operations yet, no new messages will be created and it is possible to wait for the queues to become empty.

During this initial procedure, before the logical system names are changed, you need to make sure that no messages can accidentally reach the source (production) landscape. To guarantee this, the newly copied systems should run in their own network environment that is separated from the source systems. This prevents any messages from being sent to the source systems, for example in case some system connections were not adjusted accidentally.

⚠️

> **It is vital that the RFC Destinations were adjusted to the target environment before processing these messages!**
>
> Otherwise the messages would go into the production landscape.

⚠️

> **System copy with non-empty message queues is critical with SAP Exchange Infrastructure (SAP XI) systems!**
>
> **On the target system, you may not process messages in status "scheduled for outbound processing"!**
>
> Since these messages already went through receiver determination, the receiver hostname is already contained in the message. Such messages would always go into the production landscape when processed on the target SAP XI system.
>
> With SAP XI you need to ensure that no such messages exist in the system when doing the copy.

Risk 5: Data inconsistencies in target landscape

When copying a landscape of multiple connected systems, you need to consider data consistency between the systems. Data consistency in this context means that application data that is exchanged between the systems has a matching state regarding data modifications transferred by messages.

The consistency requirements when doing system landscape copies may vary widely, mainly depending on the type of applications and the scope of projects to be run on the target landscape. You need to decide in coordination with the designated users of the target landscape which systems need to be included in the copy and what level of consistency is required between the different systems (also see section "Define Scope of System Landscape" above).

Scenario "*PRD → PRD*"

If the target system will become the new production system, data must be consistent and identical in the target and source systems. This can always be achieved since the copy must be done offline. In case the copy is done with nonempty message queues, these messages must not be deleted.

Scenario "*PRD → NPS*"

For scenario "*PRD → NPS*", the consistency requirement may range from

- No consistency required

   In this case, there are no dependencies between different systems or components of your target landscape. This for example suffices if you want to run local functionality tests or technical upgrade tests that are not related to any other connected systems.

You can copy or refresh a single component independently of other components of the target landscape. Any pending messages in the queues of a component should be deleted after the copy since they cannot reasonably be processed if the other systems have a different state.

- Only near consistency (but not 100% consistency) required

This applies if you need to achieve a high level of data consistency between the systems, but it is not relevant if some inconsistencies are caused by the copy procedure. This option may be sufficient for example for demo or training systems. This level of consistency is interesting since it can be achieved without any special consistency technology even with online copy.

In this case, all systems must be copied at the same time. Pending messages in the queues of the systems may be processed or deleted, providing either some more or some less data consistency.

Technologies to achieve this level of consistency are:

  - Point-in-time restores of an online backup of each database to a similar point in time

  - Online split-mirror copy without using consistency technology options

- Strict consistency (100% consistency) required

Strict consistency will usually be demanded in a test landscape to be used for integration or functional upgrade tests, but also training or demo systems may have this level of requirement.

For this, all systems of the source landscape in scope need to be copied at the same time. To ensure full data consistency in the target landscape, all systems must either be shut down in order to execute an offline copy or, when online copy is needed, some special consistency technology must be used.

Any pending messages in the queues of the systems must be processed in the target landscape after the copy was done.

Options to achieve this level of consistency are:

  - Offline copy (shut down all systems during the copy)

  - Online split-mirror copy using Consistency Technology offered by multiple storage vendors (see http://service.sap.com/atg for more information)

  - Online copy exploiting the Coordinated Suspend methodology (see http://service.sap.com/atg for more information)

Conclusion

To provide a consistent copy of a source landscape, all components need to be copied together at the same time. The copy phases and steps as described later in this guide must be executed in parallel for all components of the landscape.

In case no consistency is required for a target system or target landscape, each component can be copied separately without regards to copying any other components. If you are still using a common copy procedure (for example because an appropriate technology is in place), you can renounce from processing any pending messages and just delete them.

System Landscape Copy Procedure

Overview

The following table provides an overview of all steps to be executed during the system landscape copy process. These steps are grouped into 6 main phases. On the right side, this table shows whether a step is applicable for the different copy scenarios introduced above.

For executing these steps you will need the detail information given below and also need to check the solution-specific [*SAP System Landscape Copy Notes*] for additional details to be observed during execution of each step for a specific SAP solution or component.

The phases 2 – 6 must be done in parallel for all components of the landscape that are to be copied together.

Step	Where to execute	Description	System Type	PRD → PRD		PRD → NPS			
						Installation		Refresh	
				Min Risk	Min Imp.	Min Risk	Min Imp.	Min Risk	Min Imp.
Phase 1: Preliminary Tasks									⬇
1.1		Get required documentation		X	X	X	X	X	X
1.2		Determine a clear copy strategy		X	X	X	X	X	X
1.3	S	Build up desired initial state of source system	Any			X	X	X	X
1.4	T	Prepare the hardware and environment for the target systems	Any	X	X	X	X		
1.5	T	Check the hardware and environment for the target systems	Any					X	X
1.6	S,T	User Information		X	X	X	X	X	X
Phase 2: Preparations on Target Environment								⬆	⬇
2.1	T	Save important information of components of the target landscape	WebAS					X	X
2.2	T	Finish operations on target systems	Any					X	X
2.3	T	Do solution-specific preparations	Any					X	X
2.4	T	Stop components of the target landscape	Any					X	X
2.5	T	Save other configuration data of the target landscape	Any					X	X

Step	Where to execute	Description	System Type	PRD → PRD		PRD → NPS			
						Installation		Refresh	
				Min Risk	Min Imp.	Min Risk	Min Imp.	Min Risk	Min Imp.
2.6	T	Backup target landscape	Any					(X)	(X)
2.7	T	Prepare any other systems outside the target landscape	Any	X	X			X	X
Phase 3: Preparations on Source Environment								⬆⬇	
3.1	S	Prepare source systems		X	X	X	X	X	X
3.2	S	Save configuration information		X	X				
3.3	S	Stop productive operation in source systems		X	X	X		X	
3.4	S	Complete message processing in source landscape	WebAS	X		X	X *	X	X *
3.5	S	Disable communication between source systems	WebAS	X		X		X	
3.6	S	Shutdown source landscape	Any	X	X	X		X	
3.7	S	Backup source landscape	Any	X	X	(X)	(X)	(X)	(X)
3.8	S	Prepare any other systems outside the source landscape	Any	X	X	X	X	X	X
Phase 4: Copy Process								⬆⬇	
4.1	S	Capture data of SAP WebAS source system	WebAS	X	X	X	X	X	X
4.2	T	Start installation of SAP WebAS target system	WebAS	X	X	X	X		
4.3	T	Copy the data using the selected method	WebAS	X	X	X	X	X	X
4.4	T	Complete installation of SAP WebAS target system	WebAS	X	X	X	X		
Phase 5: Final Activities on Source Environment								⬆⬇	
5.1	S	Startup production	Any			X		X	
5.2	S	Re-enable communication between source systems	WebAS			X		X	
5.3	S	Perform follow-up activities from [System Copy Guide]	WebAS			X	X	X	X

Step	Where to execute	Description	System Type	PRD → PRD		PRD → NPS			
						Installation		Refresh	
				Min Risk	Min Imp.	Min Risk	Min Imp.	Min Risk	Min Imp.
5.4	S	Restart productive operation in source systems	Any			X		X	
Phase 6: Final Activities on Target Environment									↑
6.1	T	Execute follow-up activities on OS and DB level	WebAS	X	X	X	X	X	X
6.2	T	Prevent any unintentional actions on target system	WebAS	X	X	X	X	X	X
6.3	T	Start target system	WebAS	X	X	X	X	X	X
6.4	T	Adjust system connections	WebAS	X	X	X	X	X	X
6.5	T	Execute follow-up activities from [System Copy Guide]	WebAS	X	X	X	X	X	X
6.6	T	Process pending messages	WebAS	(X)	X	(X)	X	(X)	X
6.7	T	Convert logical system names	WebAS			X	X	X	X
6.8	T	Do solution-specific adjustments	Any	X	X	X	X	X	X
6.9	T	Import saved information from step 2.1	WebAS					X	X
6.10	T	Register queues	WebAS	X	X	X	X	X	X
6.11	T	Install new SAP license	WebAS	X	X	X	X	X	X
6.12	T	Install and configure additional components	Other			X	X		
6.13	T	Check and adjust integration to other components	Other	X	X	X	X	X	X
6.14	T	Load or initialize data in additional components	Other			X	X	X	X
6.15	T	Check operability and data consistency	Any	X	X	X	X	X	X
6.16	T	Release target landscape for operations	Any	X	X	X	X	X	X

<u>**Notes:**</u> The column "Where to execute" indicates whether a step is executed on the source (S) or target (T) systems. The column "System type" denotes for what kind of system components a steps is applicable:
- "WebAS" stands for steps that are done for SAP WebAS based components.
- "Other" stands for non-WebAS based components
- "Any" stands for WebAS and non-WebAS based components

* required for SAP XI, see description below

The following list summarizes some of the most important aspects discussed in the first part of this Best Practice:

- The copy procedure for WebAS-based systems consists of similar steps. Therefore, the following procedures are written to be executed in parallel for each system or component of your landscape. For specific SAP solutions, solution-specific steps may be required. These are described in separate notes. You can follow the procedure step by step, checking for each step whether a solution-specific action is required.

- To avoid data inconsistencies between the systems of the target landscape, do not copy an individual system but the entire system landscape.

- A system copy procedure may require additional actions that are special only for your implementation. During the system copy planning phase, identify and document any such additional actions not described in the SAP documentations.

- When moving or migrating a production system (scenario "*PRD → PRD*"), no changes may be done to the SID, logical system names or RFC destination names.

- When building up a new system through system copy (scenario "*PRD → NPS*"), the new host name and SAP System name can be chosen freely.

- Implement a sound strategy for logical system naming in an NPS landscape that, whenever possible, spares renaming logical systems after a system copy

- During system copy, all non-WebAS components of a landscape should generally be installed manually using the standard Installation Guides. This can be done either before or after copying the WebAS-based system.

- After you have executed the technical installation and database copy, the new target systems and components must be adjusted to the new environment as described in this document.

- After system copy, the target systems must not be able to connect to the production systems to avoid any damage due to misguided messages or function calls.

- We recommend that you document all the actions performed.

- Thoroughly test the selected copy technology and copy procedure including all required post-processing activities

- Check for any possible restrictions with the selected copy technology or SAP solution to be copied

- Take care when copying an SAP XI system with non-empty message queues, never process messages with status "scheduled for outbound processing" in the target landscape.

- Executing the system copy for SAP WebAS JAVA is only required if the source system actually includes a J2EE engine. If a source system was for example upgraded from a previous release, it often only contains an ABAP stack without J2EE engine and there is no need for the JAVA copy even if this is offered during installation of the target system.

Phase 1: Preliminary Tasks

Step 1.1		Get required documentation	↑

Task of step

Ensure that you have the current version of all required documentation available for doing the system landscape copy.

What to do

Check if all documentation is available and up-to-date (also refer to section "How to use this Best Practice")

- This Best Practice, which is available from http://service.sap.com/solutionmanagerbp.

- SAP note 885343 providing updates and corrections on this Best Practice

- SAP Guide "Homogeneous and Heterogeneous System Copy for SAP Systems based on SAP Web Application Server ABAP" [System Copy Guide], available from http://service.sap.com/instguides. Choose the release corresponding to your SAP WebAS installations.

- When copying SAP components based on SAP WebAS JAVA:
  SAP Guide "Homogeneous and Heterogeneous System Copy for SAP Systems based on SAP Web Application Server JAVA" [System Copy Guide - JAVA for 6.40], available from http://service.sap.com/instguides. Choose the release corresponding to your SAP WebAS installations.

- Additional documentation and SAP notes referred to by the [System Copy Guide] and [System Copy Guide - JAVA for 6.40]

- [*SAP System Landscape Copy Notes*] for all solutions included in the scope of your landscape. An overview of those notes currently available is contained in **SAP note 885343**.

- Possible additional SAP notes mentioned in these [*SAP System Landscape Copy Notes*].

Step 1.2		Determine a clear copy strategy	↑

Task of step

Before starting the system copy, you need to understand clearly how it will be performed in your particular case. The information given in the first part of this best practice will assist you in determining an appropriate landscape copy strategy.

What to do

Work out a sound copy strategy by performing the following actions:

- Define the key requirements that the newly copied systems should meet.

- Define scope of landscape to be copied (which systems belong to the landscape to be copied)

- See solution specific SAP notes for an overview of components belonging to a SAP solution landscape. If available you can also check your business process descriptions or swim-lane diagrams to find out which components are involved in the business processes you require in the target landscape.

- Define the system copy procedure based on the key requirements and potential risks.

- Decide on the copy technology to be used

- Define the exact changes that will be made during the system copy to hardware, host names, operating system, database, SID, logical system names, and so on. Decide how logical systems from production will be mapped to logical systems in the target environment.

- Estimate the potential risks created by these changes: analyze the possible workarounds and ask if it is really necessary to make the changes.

- Prepare the detailed project plan for system copy, including the verification procedures after the system copy.

- Contact SAP if you are not sure about parts of the system copy procedure or potential risks.

Step 1.3	Source	Build up desired initial state of source system	↑

→ Applicable for scenario "**PRD → NPS**".

Task of step

If desired, apply any lacking changes to the source systems which should be present in the target systems as well. This step can spare from applying required modifications twice.

What to do

- Make sure that all desired transports were imported into production.

- Apply all SAP recommendations from SAP Service Sessions and any SAP recommendations resulting from customer problem messages in the source systems

- Implement all currently available SAP Support Packages in the source systems

Step 1.4	Target	Prepare the hardware and environment for the target systems	↑

→ Not applicable for **Refresh** of the target landscape.

Task of step

As the system environment fundamentally influences the installation and system copy procedures, it is important to have a clear understanding of the source and target landscape before you start the system copy. Before you can begin with the practical tasks of installing or copying the components of the target landscape, you need to plan the setup of the landscape and prepare the environment accordingly.

What to do

Decide which components you need in your target system landscape, work out how these components must be distributed to hosts and calculate the sizing of the hardware involved.

- Define and size the target hardware environment

- Determine SID of target systems

- Get required installation CDs, check the required software releases, patches, …

- Check if you have the appropriate tool versions for your current SAP kernel

- Prepare the target host for the SAP installation

    o Do the preparations described in [System Copy Guide]

    o When copying an SAP WebAS 6.40 JAVA system, also prepare the target host according to the preparations listed in [System Copy Guide - JAVA for 6.40]

- Get Migration Key when doing a heterogeneous system copy (migration), see http://service.sap.com/osdbmigration

- When using SAPCRYPTOLIB for encrypting data, it may be required to order a new license ticket for the target system (see SAP note 662340)

For more information, refer to the installation and configuration guides. Normally, on the basis of information about the expected workload, applications to be implemented and number of users, an SAP hardware partner can recommend a feasible configuration.

Step 1.5	Target	Check the hardware and environment for the target systems	⬆

→ Applicable for *Refresh* of the target landscape.

Task of step

Check if the target environment still fits to serve as target for copying the source system because the source environment may have changed since the last copy or refresh was done.

What to do

The following things should be done before each refresh of an existing target landscape:

- Define scope of landscape to be refreshed

- Compare components used in source and target landscapes: Are there any new components used in the source or target landscape?

- Check target disk space: Is it still sufficient to host the current source database size?

- Compare the software level of source and target components. If the source versions have changed, the target components may need to be adapted correspondingly. Check operating system, database and SAP software versions. Check versions / patch levels of SAP WebAS and non-WebAS based SAP components.

Step 1.6	S / T	User Information	⬆

Task of step

Inform users about the planned copy or refresh. Users of the target system need to be aware of the refresh since some information in a NPS will get lost. They need to coordinate their projects and know when the system is not available. Users of the production systems need to be informed about the downtime when choosing an offline copy method.

What to do

- Email time schedules to users and project owners working on the target landscape

- Communicate scheduled downtime of production systems (if applicable)

Phase 2: Preparations on Target Environment

Step 2.1	Target	Save important information of components of the target landscape	⬆

→ Applicable for *Refresh* of the target landscape.

Task of step

Since the refresh will delete any specific data created in the target systems, save any data or configuration information that needs to be preserved before refreshing the target systems. This information can later be re-entered into the target systems.

What to do

Make notes of any important information that is required to repeat the target landscape configuration after the refresh. Export any data that needs to be preserved, for example using the SAP transport mechanism, or take screenshots of the current configurations.

Information you may want to preserve can include for example:

- Users
  If you want to preserve users, user settings and authorizations of your target system for later

re-import after the refresh (for example if you are using different users than in production), you can export them to a transport using transaction SCC8, parameter SAP_USER. After the refresh this transport can be reimported into the target system using transaction STMS, followed by import post-processing with transaction SCC7. For more information on SCC8 and SCC7 see topic "client copy" in the SAP online documentation.
If your target system is connected to a system for central user administration (CUA), the target system users can also be redistributed from the CUA system after the copy.

- Printers
  Export to a transport can be done with transaction SPAD → Output devices → Edit → Transport, also see SAP note 64337 or the Online Documentation.

- Pending transports which were not imported to production systems

- Current transport number
  Note the current transport number given in field ‚trkorr' of table E070L. This information might be required to reset to an appropriate number after the copy, also see SAP note 12799.

- Logon groups
  Take screenshot of current settings in transaction SMLG.

- List of logical system names
  Take screenshot of current settings from transaction BD54 or table V_TBDLS.

- RFC destinations
  Take screenshots of settings in transaction SM59.

- Connections to legacy systems

- ALE partner profiles
  Export can be done with transaction BD64.

- List of outbound destinations and registered inbound queues
  Make screenshots or save the list output of transactions SMQS and SMQR.

- List of RFC users
  A list of RFC users can be obtained with transaction SUIM → User → By logon date and password change.

- Operation modes
  Note the operation mode definitions in transaction RZ04.

- System messages
  If required, note the current system messages as displayed by transaction SM02.

- Tests results

- If the system copy is going to overwrite the current TMS domain controller, the domain controller must be moved to another system. After the copy, it can be moved back if desired. See SAP online documentation for more information.

Check if you need to preserve any other information not listed above. Consider if there's also information on non-WebAS based components that needs to be noted or preserved.

Also check the solution-specific [*SAP System Landscape Copy Notes*] for possible additional objects or activities.

Step 2.2	Target	Finish operations on target systems	↑

→ Applicable for **Refresh** of the target landscape.

Task of step

Finish operations on the target systems. Ensure consistency to systems outside the target landscape that are not refreshed during this procedure.

This step is also important to provide a useful state for backup for the fallback scenario (see step 2.6).

What to do

- Finish any work in the target systems.

- Lock users except DDIC and maybe other special users

- Check and stop batch jobs. This can be done using transaction SM37 or report BTCTRNS1.

- Complete queue processing on all communication channels to systems of the NPS landscape that are not refreshed

Step 2.3	Target	Do solution-specific preparations	⬆

→ Applicable for **Refresh** of the target landscape.

Task of step

Some SAP solutions may require additional preparations to be done before a system refresh.

What to do

Check the solution-specific [*SAP System Landscape Copy Notes*] for the solutions you are copying and execute any actions listed there.

Step 2.4	Target	Stop components of the target landscape	⬆

→ Applicable for **Refresh** of the target landscape.

Task of step

The target landscape must be shut down before the data can be copied.

What to do

Shutdown all components of the target landscape. See specific [*SAP System Landscape Copy Notes*] for a list of components. If more information is required (for example concerning the order of the components' shutdown), also check the solution-specific operation guides.

Step 2.5	Target	Save other configuration data of the target landscape	⬆

→ Applicable for **Refresh** of the target landscape.

Task of step

Save any other configuration information of the target environment that could be overwritten by the copy procedure (like operating system or database profiles). Such data is stable after the components' shutdown.

What to do

On target landscape save:

- Database profiles

- SAP profiles

- Operating system user profiles / home directories

Check if you need to preserve also other information not listed above. Consider if there's also information on non-WebAS based components that needs to be noted or preserved.

Step 2.6	Target	Backup target landscape	⬆

→ Applicable for **Refresh** of the target landscape.

→ Only required if you need a fallback option for the target landscape

Task of step

Create a backup of the target systems in case you need a fallback option should the refresh or copy procedure fail.

What to do

Backup all components that are to be refreshed. This backup should be consistent in relation to any other components of the target landscape that are not refreshed during the copy procedure.

Step 2.7	Target	Prepare any other systems outside the target landscape	⬆

Task of step

You might need to take any precautions on the components of the target landscape that are not copied or refreshed during this procedure. For example you might need to disable connections to or from other systems.

What to do

Check if there are any such actions required for your landscape.

Check if there are any actions described in the solution-specific [*SAP System Landscape Copy Notes*].

Phase 3: Preparations on Source Environment

Step 3.1	Source	Prepare source systems	⬆

Task of step

Prepare all components of the source landscape for the copy.

What to do

Execute the source system preparations listed in the following places:

- For SAP WebAS based components, do the system copy preparations as described in [System Copy Guide].

- When copying SAP WebAS 6.40 JAVA based components, also do the preparations of the source system as described in [System Copy Guide - JAVA for 6.40].

- Check solution-specific [*SAP System Landscape Copy Notes*] to see if any other tasks are required for a component (either WebAS or non-WebAS based components)

- For a Unicode conversion, also check the Unicode Conversion Guide for special preparations (see SAP note 548016)

> **Some of the actions described there are mainly important for scenario "*PRD → PRD*".**
>
> They may not be mandatory for creating or refreshing a non-productive system and especially not for scenario "*Minimum Impact*".

Step 3.2	Source	Save configuration information	⬆

→ Required for scenario "*PRD → PRD*".

Task of step

Save any configuration information of the source environment that may be needed for configuring the landscape after the copy / migration or in case a fallback to the original environment is inevitable. Having the original configuration settings at hand can be helpful to compare source and target systems.

What to do

You can save the screenshots of transactions SMQR, SMQS, SM59, BD54 as images or text files. Do this on all systems to be copied.

Step 3.3	Source	Stop productive operation in source systems	⬆

→ Applicable for scenario "***PRD → PRD***"

→ Applicable for scenario "***Minimum Risk***"

Task of step

Before shutting down the source systems in a later step, stop any user or batch job activity to allow for the communication queues to empty and for additional preparations to be taken.

What to do

Stop productive operation in source systems by

- Locking the production systems for user access.
  This can be done either by using "tp locksys" to lock the complete system or by locking users selectively. The second option may be required for example if RFC users need to stay unlocked to finish processing of pending messages but dialog users shall be locked so no new RFCs can be created. When all local RFCs are processed (see next step), the system can be locked completely to prevent from newly incoming messages from systems not belonging to the landscape to be copied. To prevent newly incoming messages, it might also be necessary to disable communication paths in other systems outside the landscape to be copied.

- disconnecting all current users

- stopping and disabling all batch jobs. This can be done using report BTCTRNS1.

Step 3.4	Source	Complete message processing in source landscape	⬆

→ Only applicable for scenario "***Minimum Risk***"

→ **Required with SAP XI for all messages in status „scheduled for outbound processing"**

Task of step

Complete message queue processing in all source systems so the target systems will not try to exchange messages after startup.
For discussion of system copy with non-empty message queues see Risk 4 above.

⚠

> **When copying a landscape including an SAP XI system, all messages with status "scheduled for outbound processing" must be processed before doing the copy!**
>
> Messages with this status already went through receiver determination and contain the receiver hostname. Since the receiver determination cannot be repeated after the system copy, such messages would be incorrectly routed to the production source landscape.

What to do

Check that

- RFC queues are empty

- All IDOCS are processed (transaction WE05)

- SAP XI messages queues are empty

- Make sure that no SAP XI messages are in status "scheduled for outbound processing"

If the queues are not empty, start the queues and wait until all the messages are processed.

> Please note that some message queues may not be supposed to be processed or may not need to be emptied (for example some SAP CRM Mobile Client queues).

Step 3.5	Source	Disable communication between source systems	↑

→ Applicable for scenario "***Minimum Risk***"

Task of step

Stop all communication between components of the source landscape and invalidate all communication paths. The intention is to disable all communication already on the source landscape thus the target systems are instantly unable to communicate at startup. This can help to reduce any risks for the source environment in case the target systems are started unintentionally before other necessary precautions have been taken or if these precautions are insufficient.

> Especially when doing an online copy using online backup or split mirror technology, it is desirable to skip this step to avoid an impact on productive operation. In this case you need to ensure by other means, that Risk 1 and Risk 2 discussed above are eliminated. Most of all you must ensure that during startup of the target landscape (whether intentionally or accidentally) no communication can be established with the production (source) systems.
>
> If you execute a copy with empty message queues (which means that you executed step 3.4), the actions described here may not be required. If no messages exist, nothing can be exchanged between the target systems. The only thing to make sure is that no new messages are created on the target systems before adaptation of the system connections was completed.

What to do

Execute those actions from the list below which are appropriate for your copy scenario and your risk mitigation analysis:

1. Save the initial configuration of all parameters you are changing below.

   Save queue status, RFC destinations, and so on before changing them. This information about the parameter values before the copy is needed to reset the parameters to their original values after the copy was done. This queue status is also important so you later know which queues were already unregistered even before the copy.

   You can save screenshots of the transactions SMQR, SMQS, SM59 as images or text files.

2. Lock the outbound queues

   Outbound queues can be locked by creating a stopmark. This can be done with transaction SMQ1 or report RSTRFCQ1. Generic queue names like 'queue*' are supported whereas the

destination must be fully specified, which means that the lock needs to be set for each destination you want to be locked.

When the outbound queues are locked, no queued RFC (qRFC) using this queue and destination can be processed. This provides control over when pending qRFCs will be transmitted in the target landscape.

Note: This does not include transactional RFCs (tRFCs) because these do not use queues.

3. Unregister the outbound destinations

Unregistering outbound destinations at the outbound scheduler offers the advantage that it works for both qRFC and tRFC, since usually also tRFCs are processed by the outbound scheduler.

Destinations can be unregistered using transaction SMQS. All the queues and destinations should then have type 'U'. All queue entries for these destinations remain in the "recorded" state until either the destination has been registered or the entries have been manually activated.

Note: Unregistering destinations cannot provide complete protection against RFC execution because

- manual activation is not prevented. You should make sure that only few administrators are permitted to activate queues (transaction SM58 for tRFC and SMQ1 for qRFC).
- some application programs might activate their destinations automatically.
- it is not possible to deregister generic destinations. Thus you have to make sure that you unregistered the outbound destinations for all connected systems. When executing an RFC call for a non-listed destination, this destination is automatically registered by the QOUT-scheduler.

Note: Locking the outbound queues or unregistering the outbound destinations before changing the RFC destinations prevents communication errors during the processing of queue entries. But this is not critical since the queues can be restarted in either case.

4. Lock the inbound queues

Locking the inbound queues cannot prevent communication in the target landscape since incoming messages are still accepted and only their execution is halted. But it may still be helpful for a controlled start of the target landscape since the execution of inbound messages may again trigger new messages to be sent to other systems, which may not yet be desired then.

Inbound queues for qRFCs can be locked by creating a stopmark with transaction SMQ2 or report RSTRFCI1. Generic queue names are supported.

5. Unregister the inbound queues

Unregistering inbound queues at the inbound scheduler has the same effect as locking inbound queues. Inbound queues can be unregistered with transaction SMQR. You can select all queues and unregister them in one go.

Note: It is also possible to unregister a generic destination like '*', but you must be aware that this will automatically delete all other destinations comprised by the generic term! So make sure that you have a written copy of the original SMQR settings so you are able to reconstruct the original state of all inbound queues listed in SMQR.

6. Disable the RFC destinations and connections to other systems

To change RFC destinations pointing to other productive systems, use transaction SM59. For example, you can change the host name by adding a string like ".syscopy" or a prefix like "#". Then the host name points to a nonexistent server and communication is impossible via this destination.

> Remember to also execute appropriate actions on the non-WebAS based components of the source landscape if required.

Step 3.6	Source	Shutdown source landscape	↑

→ Required for scenario "**PRD → PRD**"

→ Applicable for scenario "**Minimum Risk**"

Task of step

Shutdown the source systems to provide a stable and consistent state for copying.

This step can also protect against any interference from the target landscape before the cleanup is done there. But this additionally requires that the startup of the source systems is delayed until the cleanup on the target systems will be done, which means that phase 5 will be executed after phase 6.

> **Offline copy is mandatory for scenario "*PRD → PRD*".**

What to do

Shutdown all components in the correct order. See specific [*SAP System Landscape Copy Notes*] for a list of components. If more information is required (for example concerning the order of the components' shutdown), also check the solution-specific operation guides.

Step 3.7	Source	Backup source landscape	↑

→ Required for scenario "**PRD → PRD**".

→ Optional for scenario "**PRD → NPS**".

Task of step

Before migrating or moving the source landscape, perform a full backup of all components involved in the copy. This is important to have a valid backup in case migration or relocation of the productive system (scenario "*PRD → PRD*") fails. This step is not required if you copy or refresh to a NPS without affecting the production systems.

What to do

Backup application data and filesystems, including the software and configuration data for all components to be copied.

Backup database profiles and SAP profiles.

Step 3.8	Source	Prepare any other systems outside the source landscape	↑

Task of step

You might need to take any precautions on the components of the source landscape that are not copied during this procedure. For example you might need to disable connections from other systems.

What to do

Check if there are any such actions required for your landscape.

Check if there are any actions described in the solution-specific [*SAP System Landscape Copy Notes*].

Phase 4: Copy Process

The copy process describes the actual phase of providing (installing) the target system and transferring (copying) the source data to the target database system. Several methods are available for this. For an overview of applicable methods see section "Copy Technologies". The following table provides an overview of the general steps to be executed using the different copy technologies.

With an SAP WebAS ABAP system, it is sufficient to only copy the ABAP database from the source to the target system. With an SAP WebAS ABAP+JAVA system, the ABAP and JAVA database as well as the JAVA Central Instance (JAVA CI) must be copied. The JAVA CI includes for example the JAVA filesystem structure, the SDM and possible application-specific filesystem content. With an SAP WebAS JAVA system, the JAVA database and the JAVA CI must be copied.

	R3load / Jload	Database Restore	File Copy (not available for all databases)	Split-Mirror
4.1 Capture source data	Export source database and JAVA CI with SAPInst	Create backup of source database; Export JAVA CI with SAPInst	*not required* *	*not required* *
4.2 Install target system	Run SAPInst	Run SAPInst	Run SAPInst	Run SAPInst
4.3 Transfer source data into target database	Import is done automatically by SAPInst	Restore database	Copy database files	Split mirror disks
4.4 Complete installation of target system	SAPInst	SAPInst	SAPInst	SAPInst

* For a WebAS ABAP+JAVA or WebAS JAVA system, the export of the JAVA CI needs to be factored in

> The highlighted fields indicate the period when the preparation of the source system must be finished according to phase 3 from above, for example when the source system must be offline.
>
> With the File Copy and Split-Mirror method, you may consider running the first part of the installation with SAPInst (step 4.2) before executing the steps of phase 3, to shorten any impact on the source systems imposed by phase 3.
>
> With R3load / Jload and Database Restore method, steps 4.1 and 4.2 are completely decoupled.

> When copying a landscape of multiple systems, cross-system data consistency between the different systems will only be determined by step 4.1 or 4.3 respectively! All other steps of the copy procedure can be done in parallel - but independently - for each of the systems belonging to the landscape.
>
> If the data of the target landscape must be consistent between the systems, an appropriate

> consistency technology must be used in step 4.1 or 4.3 (see discussion of Risk 5 above).

> When copying an SAP solution that is installed on top of an SAP WebAS, this solution is completely copied by the above steps. An additional call of SAPInst, which is required during a regular installation of such an SAP solution, is obsolete when doing a system copy.

The detailed proceeding depends on the different WebAS deployment options and WebAS releases. The following tables summarize the general copy procedure for Web AS ABAP, WebAS ABAP+JAVA and WebAS JAVA on Oracle using

- R3load / Jload method for SAP WebAS 6.40

- R3load / Jload method for SAP NetWeaver 2004s

- Database Restore method for SAP WebAS 6.40 SR1

- Database Restore method for SAP NetWeaver 2004s

More details on these steps and on the other copy methods can then be found in the remainder of this section.

> Depending on the installation type and system setup, additional installation steps (installation services) which are not shown in the tables below may be required, for example for installing a high availability system. For database systems other than Oracle, some installation services listed below may be obsolete or may have to be run on the central instance host instead of the database host (e.g. with MaxDB or DB2 z/OS).
> See the installation and system copy guides for WebAS for more specific information.

The following tables use the following notation:

S   = source system
T   = target system
DB = database host (host where the database is installed)
CI   = central instance host (host where the SAP central instance is installed)
SAPInst(DB) = run SAPInst on the database host
SAPInst(CI) = run SAPInst on the central instance host in case of a distributed system installation, otherwise run SAPInst on the database host. This step is required even in case of a central system installation unless explicitly marked by "Distributed System only"!

R3load / Jload method for WebAS 6.40

Execute on		SAP WebAS ABAP	SAP WebAS ABAP + JAVA (JAVA Add-in)	SAP WebAS JAVA (JAVA system)	Step
S	CI	WebAS shutdown	WebAS running	WebAS running	4.1
	CI	/	SAPInst (CI) → export JAVA CI and JAVA DB	SAPInst (CI) → export JAVA CI and JAVA DB	4.1
	CI	/	Stop WebAS when requested on display of the 'summary screen'	select option stop 'J2EE cluster' to automatically shutdown the WebAS	4.1
	CI	/	Finish SAPInst (CI)	/	4.1
	DB	SAPInst (DB) → export ABAP DB	SAPInst (DB) → export ABAP DB	/	4.1
	DB	Transfer export files	Transfer export files	Transfer export files	4.1
T	DB	SAPInst (CI) → install ABAP CI	SAPInst (CI) → install ABAP CI	**Distributed System only:** SAPInst (CI) → prepare CI host	4.2 4.3
	CI	SAPInst (DB) → import ABAP DB	SAPInst (DB) → import ABAP DB	/	4.2
	DB	/	SAPInst (DB) → import JAVA DB → installs & imports JAVA CI (central system)	SAPInst (DB) → import JAVA DB → installs & imports JAVA CI (central system)	4.2 4.3
	CI	/	**Distributed System only:** SAPInst (CI) → install & import JAVA CI	**Distributed System only:** SAPInst (CI) → install & import JAVA CI	4.4

R3load / Jload method for NetWeaver 2004s

Execute on		SAP WebAS ABAP	SAP WebAS ABAP + JAVA (JAVA Add-in)	SAP WebAS JAVA (JAVA system)	Step
S	CI	WebAS shutdown	WebAS shutdown	WebAS shutdown	4.1
	DB	SAPInst (DB) → export ABAP DB	SAPInst (DB) * → export ABAP+JAVA DB → exports JAVA CI (central system)	SAPInst (DB) * → export JAVA DB → exports JAVA CI (central system)	4.1
	CI	/	**Distributed System only:** SAPInst (CI) * → export JAVA CI	**Distributed System only:** SAPInst (CI) * → export JAVA CI	4.1
	DB	Transfer export files	Transfer export files	Transfer export files	4.1
T	CI	**Distributed System only:** SAPInst (CI) → prepare CI host	**Distributed System only:** SAPInst (CI) → prepare CI host	**Distributed System only:** SAPInst (CI) → prepare CI host	4.2
	DB	SAPInst (DB) → import ABAP DB → installs CI (central system)	SAPInst (DB) → import ABAP+JAVA DB → installs CI & imports JAVA CI (central system)	SAPInst (DB) → import JAVA DB → installs & imports JAVA CI (central system)	4.2 4.3
	CI	**Distributed System only:** SAPInst (CI) → install CI	**Distributed System only:** SAPInst (CI) → install CI & import JAVA CI	**Distributed System only:** SAPInst (CI) → install & import JAVA CI	4.4

* on DB2 z/OS: SAPInst is run only once on the CI host, this will export the database and the JAVA CI

Database Restore method for WebAS 6.40 SR1

Note: For WebAS 6.40, the database restore method is supported with service release SR1. For more
      information see the newest version of the [System Copy Guide - JAVA for 6.40]

Execute on		SAP WebAS ABAP	SAP WebAS ABAP + JAVA (JAVA Add-in)	SAP WebAS JAVA (JAVA system)	Step
S	CI		WebAS running	WebAS running	4.1
	CI	/	SAPInst (CI) → export JAVA CI	SAPInst (CI) → export JAVA CI	4.1
	CI	/	Stop WebAS when requested on display of the 'summary screen'	select option stop 'J2EE cluster' to automatically shutdown the WebAS	4.1
	CI	/	Finish SAPInst (CI)	/	4.1
	DB	Create DB Backup, Oracle: Generate controlfile	Create DB Backup, Oracle: Generate controlfile	Create DB Backup, Oracle: Generate controlfile	4.1
T	CI	SAPInst (CI) → install ABAP CI	SAPInst (CI) → install ABAP CI	**Distributed System only:** SAPInst (CI) → prepare CI host	4.2
	DB	SAPInst (DB)	SAPInst (DB)	SAPInst (DB)	4.2
	DB	Restore → ABAP DB	Restore → ABAP+JAVA DB	Restore → JAVA DB	4.3
	DB	Finish SAPInst (DB)	Finish SAPInst (DB)	Finish SAPInst (DB) → installs & imports JAVA CI (central system)	4.4
	CI	/	SAPInst (CI) → install and import JAVA CI	**Distributed System only:** SAPInst (CI) → install & import JAVA CI	4.4

Database Restore method for NetWeaver 2004s

Execute on		SAP WebAS ABAP	SAP WebAS ABAP + JAVA (JAVA Add-in)	SAP WebAS JAVA (JAVA system)	Step
S	CI		WebAS shutdown	WebAS shutdown	4.1
	CI	/	SAPInst (CI) → export JAVA CI	SAPInst (CI) → export JAVA CI	4.1
	DB	Create DB Backup, Oracle: Generate controlfile	Create DB Backup, Oracle: Generate controlfile	Create DB Backup, Oracle: Generate controlfile	4.1
T	CI	**Distributed System only:** SAPInst (CI) → prepare CI host	**Distributed System only:** SAPInst (CI) → prepare CI host	**Distributed System only:** SAPInst (CI) → prepare CI host	4.2
	DB	SAPInst (DB)	SAPInst (DB)	SAPInst (DB)	4.2
	DB	Restore → ABAP DB	Restore → ABAP+JAVA DB	Restore → JAVA DB	4.3
	DB	Finish SAPInst (DB) → installs CI (central system)	Finish SAPInst (DB) → installs CI & imports JAVA CI (central system)	Finish SAPInst (DB) → installs & imports JAVA CI (central system)	4.4
	CI	**Distributed System only:** SAPInst (CI) → install CI	**Distributed System only:** SAPInst (CI) → install CI & import JAVA CI	**Distributed System only:** SAPInst (CI) → install & import JAVA CI	4.4

Step 4.1	Source	Capture data of SAP WebAS source system	↑

Task of step

Capture the data of the source system for later import into the target system.

What to do

With R3load / Jload method:

SAPInst can be used to perform both the ABAP and JAVA export of an SAP WebAS system. The appropriate steps of phase 3 must be completed before starting the export. SAPInst is run in the source system to export the source database to a file in a database independent format. With a WebAS ABAP+JAVA or WebAS JAVA installation, the JAVA filesystem (JAVA CI) needs to be exported in addition to the database.

With WebAS 6.40, SAPInst must be run separately for ABAP and JAVA export. When copying a SAP WebAS with ABAP and JAVA, the JAVA export of the source system is done before the ABAP export. The JAVA export, which is started on the source central instance host exports the JAVA filesystem and JAVA database. The WebAS system must be running when starting SAPInst for the JAVA export and is shutdown during the process. With WebAS JAVA, SAPInst can automatically shut down the system whereas with WebAS ABAP+Java, the shut down must be done manually. For the correct order of the required export steps see the corresponding table above.

With NetWeaver 2004s, SAPInst can do both, the ABAP and the JAVA export. Only with a distributed installation, SAPInst needs to be called separately on the central instance host to export the JAVA CI. The WebAS system should be shutdown before starting SAPInst. For the correct order of the required export steps see the corresponding table above.

For more information on the export with SAPInst see [System Copy Guide] and [System Copy Guide - JAVA for 6.40].

For a Unicode conversion, also check the Unicode Conversion Guide for any special information (see SAP note 548016).

When the export is finished, copy the export files to the target server.

With Database Restore method:

Create a database backup that will be used to restore the database onto the target system. According to the copy scenario chosen ("*Minimum Risk*" or "*Minimum Impact*"), the appropriate steps of phase 3 must be completed before creating the backup.

For Oracle databases, a new controlfile must be created for the target database. This can be done as described in section "Generating the Control File Structure on theSource System" in [System Copy Guide].

For a **WebAS JAVA or WebAS ABAP+JAVA** system, an export of the JAVA central instance (filesystem content like directory structure, SDM, etc.) is required to copy this information to the target system. This export is done using the SAPInst tool and must be run on the central instance host in case of a distributed installation. Choosing the SAPInst option "Copy the database by using database tools", will tell SAPInst to skip the Jload database export and only export the source JAVA central instance. For the correct order of the required export steps see the corresponding table above. Also see the descriptions about the source system export in [System Copy Guide - JAVA for 6.40] or [System Copy Guide *for NW 2004s*].

When the export is finished, copy the export files to the target server.

With File Copy / Split-Mirror method:

For the database data nothing needs to be done here since the data will be provided to the target system with step 4.3 of the procedure.

For a WebAS **JAVA or ABAP+JAVA** system, an export of the JAVA central instance (filesystem content like directory structure, SDM, etc.) is also required to copy this information to the target system. This is required for a **New Installation** as well as for **Refresh**. The export can be done using

the SAPInst tool and must be run on the central instance host in case of a distributed installation. Choosing the SAPInst option "Copy the database by using database tools", will tell SAPInst to skip the Jload database export and only export the source JAVA central instance. See the descriptions about the source system export in [System Copy Guide - JAVA for 6.40] or [System Copy Guide for NW 2004s].

To ensure consistency of the JAVA CI export files and the database data, the JAVA CI export should be done together with the data copy in step 4.3. The export should be done offline to ensure consistency of the exported filesystem contents.

When the export is finished, copy the export files to the target server.

Step 4.2	Target	Start installation of SAP WebAS target system	↑

→ Applicable for **New Installation** of the target landscape.

→ Applicable for scenario "**PRD → PRD**"

Task of step

Install the SAP WebAS based components of the target landscape. During installation, the regular database load phase from installation CD will be replaced by the import of the data from the source system using one of the technologies described above.

Changing the SID

With scenario "**PRD → NPS**" it is often desired to assign a different SAP system-ID (SAPSID) to the target system. This is usually not a technical requirement since two systems with the same SAPSID can run on different hosts. But to avoid confusion of the users, a target system should have a SAPSID different from the production system. But renaming the SAPSID also affects the SID used on the database (DBSID), which often is the same as the SAPSID. The SAPSID is used in the directory structures of the SAP and the database installation and for some SAP WebAS releases it was also used for naming the database schema and tablespaces.

- SAP SID

  During **New installation** with SAPInst, a new target-SAPSID can be chosen freely. During **Refresh**, the SAPSID is not affected and stays the same.

- Database SID

  With R3load, the DBSID can be changed.

  With DB Restore method, the DBSID can be changed. The procedure and requirements of changing the DBSID for doing the restore are different for each database system.

  With split-mirror, the DBSID needs to be changed before starting the target database on the mirror.

- Database schema name

  The database schema name can only be changed when using the R3load tool. Using restore or split-mirror (on Oracle), the database schema cannot be renamed. To avoid the disadvantage of having the production SID in the target schema-ID, a new schema-ID was introduced with SAP WebAS 6.20. This should be chosen neutrally as described in SAP note 617444.

What to do

Run SAPInst to install all SAP WebAS based components as described in the installation documentations for the components of your target landscape. Proceed as described in the [System Copy Guide] to install and copy all SAP WebAS based components of your landscape. Choose the appropriate SAPInst option according to your copy method:

With R3load / Jload method:

SAPInst is used to install the target system, choosing the installation option "System copy / Migration". SAPInst will then automatically start the import of the database into the target system, see step 4.3.

With WebAS 6.40, SAPInst must be run separately for import of ABAP and JAVA database. With a distributed intallation, SAPInst must be run additionally to import the JAVA CI. To prepare the import of the JAVA CI in case of WebAS JAVA, SAPInst needs to be run on the CI before installing the database instance. With WebAS ABAP or WebAS ABAP+JAVA this preparation is not required due to the initial installation of the ABAP CI. For the correct order of the required import steps see the corresponding table above.

With NetWeaver 2004s, SAPInst can import the ABAP and JAVA database as well as the JAVA CI in one go. Only with a distributed installation, SAPInst must be run separately to install the CI and import the JAVA CI. To prepare the installation of the CI on a separate host in that case, SAPInst additionally needs to be run on the CI host before installing the database instance. For the correct order of the required import steps see the corresponding table above.

With Database Restore / File Copy / Split-Mirror method:

With a distributed installation of WebAS, SAPInst must be run first to install the CI or to prepare the CI host for the installation. Then SAPInst is run to install the database instance. For the correct order of the required import steps see the corresponding table above.

When SAPInst is run to install the target system, choose the installation option "System copy / Backup/Restore". Proceed as described in the [System Copy Guide] for your database system type.

At some point, SAPInst will interrupt the installation to allow the data to be provided to the target system, either by restore from the backup, by file copy or by split-mirror copy, as described in the next step.

With some database systems, installation of the database and preparation of the required directory structure must also be done manually at this point, before copying the data.

Step 4.3	Target	Copy the data using the selected method	↑

→ Only applicable for components with data to be copied

Task of step

Provide the target system with the data copied from the source system. This step must be done for all components that hold application data which needs to be copied from source to target components. This is also the main step for a *Refresh* of the target system.

What to do

Execute the technical system copy or refresh using the selected method

With R3load / Jload method:

The import of the data is started automatically by SAPInst. SAPInst will prompt for some input parameters that allow you to control the import process for example by defining the degree of parallelism during import.

For *Refresh*, a Reload procedure is available for WebAS 6.40 and Oracle databases (ABAP only), see [System Copy Guide for WebAS 6.40]. With NetWeaver 2004s, the Reload for WebAS (ABAP only) is integrated into SAPInst, see [System Copy Guide for NW 2004s].

With Database Restore method:

Restore a database backup onto the target database. On Oracle databases, a new controlfile must be created for the target system. Rename the DBSID as determined by the restore procedure (depending on the database system).

With File Copy method:

Copy the database files onto the target host. Consistency of the data files must be ensured, usually by shutting down the source database for the duration of the copy. On Oracle databases, a new controlfile must be created for the target system.

With Split-Mirror method:

Create a copy of the source system on a set of mirror disks intended for the target system.
Consistency of the copy must be ensured by either suspending the database, using Oracle hot backup
mode or using 'consistent split' technology. After splitting the mirror of the source system's disks, the
volumes are mounted to the target host. If applicable, rename the SID in all relevant locations of the
mirror (mount points, directories, filesystem permissions, profile and configuration files, …). On Oracle
databases, a new controlfile must be created for the target system.

Step 4.4	Target	Complete installation of SAP WebAS target system	⬆

→ Applicable for **New Installation** of the target landscape.

→ Applicable for scenario "**PRD → PRD**"

Task of step

Complete the installation of SAP WebAS based components of the target landscape. With some copy
methods, the installation was interrupted for copying the source data into the target system. The
installation must be restarted to finish completely. For JAVA systems, an additional installation / import
step may be required.

⚠

> **SAPInst automatically starts up the target SAP system during installation.**
>
> **If this imposes incalculable risks to your source environment due to the copy
> scenario chosen (also see Risk 1 and Risk 2 above), you should consider taking
> additional precautions or choosing another copy scenario (at least for the initial
> installation of the target system).**

What to do

With R3load / Jload method:

There is no need to restart SAPInst, since the export files from the source system are imported without
interruption.

For a distributed installation with JAVA, SAPInst no needs to be rerun on the central instance host to
import the JAVA CI from the export files created in step 4.1.

With Database Restore / File Copy / Split-Mirror method:

Since SAPInst was interrupted to allow for copying the data, SAPInst must now be continued as
described in the [System Copy Guide]. After that, the complete database (both ABAP and JAVA) will
have been copied to the target system.

For a WebAS **JAVA or ABAP+JAVA** system, the JAVA CI needs to be installed and imported into the
target system. Depending on the release of WebAS, for a central system this is done with the above
call of SAPInst. For WebAS 6.40 or for a distributed installation, SAPInst needs to be run on the
central instance host of the target system to install or import the JAVA CI. In case of a **New
Installation**, this will install all required JAVA parts and import the JAVA export from the source
system. In case of a **Refresh**, this will just import the JAVA export from the source system. See the
above tables for the correct order of the required import steps.

Phase 5: Final Activities on Source Environment

> With scenario "**PRD → PRD**", phase 5 is not applicable. Continue with phase 6 since the target environment will be the new production environment.

Step 5.1	Source	Startup production	↑

→ Applicable for scenario "**Minimum Risk**".

Task of step

Resume operations in production environment.

> ⚠️
>
> **To further minimize the risk of the target systems interfering with the production environment, restart of production could be delayed until the most critical activities on the target environment (steps 6.1 – 6.6) are completed.**
>
> Note: This additional protection prolongs downtime for production.

What to do

Restart all production components in the correct order. For more information see the solution-specific operation guides.

Step 5.2	Source	Re-enable communication between source systems	↑

→ Applicable for scenario "**Minimum Risk**".

Task of step

Re-enable the communication in the source landscape if it was disabled in step 3.5 to prevent unintended interaction between target and source systems.

What to do

Revert any changes done in step 3.5 "Disable communication between source systems" by resetting all changed parameters to their original state. The tasks are executed in opposite order using the information saved before doing the modifications.

1. Reset the RFC destinations and connections to their original values

2. Register, unlock and start the inbound queues

   Unregistered inbound queues can be registered with transaction SMQR. Locked inbound queues can be unlocked using transaction SMQ2 or report RSTRFCI3. Processing of inbound queues can be restarted with transaction SMQ2 or report RSQIWKEX.

3. Register, unlock and start the outbound queues

   Unregistered outbound destinations can be registered with transaction SMQS. Locked outbound queues can be unlocked using transaction SMQ1 or report RSTRFCQ3. Processing of outbound queues can be restarted with transactions SMQ1 (qRFC) and SM58 (tRFC) or report RSQOWKEX.

Step 5.3	Source	Perform follow-up activities from [System Copy Guide]	⬆

Task of step

Reverse any actions done on production system before the copy was done.

What to do

If applicable, perform the actions described in the [System Copy Guide] in section "Performing Follow-up Activities in the Source System", for example

- Reschedule cancelled batch jobs (transaction SM37 or report BTCTRNS2)

- Adapt operation modes to original values

When copying a SAP WebAS system with JAVA components, perform any actions described in the [System Copy Guide - JAVA for 6.40] in section "Post-Installation Activities in the Source System".

Step 5.4	Source	Restart productive operation in source systems	⬆

→ Applicable for scenario "**Minimum Risk**".

Task of step

Re-enable productive operation by reversing the changes done in step 3.3.

What to do

- Unlock the production systems for user access

- Reschedule or restart batch jobs

Phase 6: Final Activities on Target Environment

> With scenario "**PRD → PRD**", this will be the new production environment. Note that not all steps or actions of phase 6 may be applicable to scenario "**PRD → PRD**".

Step 6.1	Target	Execute follow-up activities on OS and DB level	⬆

Task of step

Prepare the target system on operating system and database level for startup. This includes for example adaptation of profiles and users.

What to do

Execute the follow-up activities described in the [System Copy Guide] for operating system and database level.

In case of a target system refresh, restore profiles saved before the refresh (see step 2.5).

For adapting the profiles in case of a Unicode conversion see SAP note 790099.

Step 6.2	Target	Prevent any unintentional actions on target system	⬆

Task of step

Prevent that any activities that might interfere with production are triggered when starting the systems of the target landscape. This especially means avoiding immediate communication between the systems after the first startup.

What to do

Take the following actions to prevent any processes from starting on the target system. Optimally, these actions should already be done before starting the SAP instance (e.g. on database level). Some actions that cannot be executed before start of the SAP WebAS instance should be done immediately after the startup in step 6.3.

Please note that during installation of the target system with SAPInst, SAPInst will automatically start up the SAP system.

- Set number of batch processes to 0 in the SAP instance profile on operating system level to prevent any batch jobs from running after startup (parameter rdisp/wp_no_btc).

- Lock system
  Execute "tp locksys" to lock the system against user logins. This can be done before starting the target SAP system, only the database must be running.

  > You can also use "tp locksys" to temporarily lock users in the source (production) systems while performing the most important cleanup activities in the target landscape. Since RFCs cannot be processed if the corresponding RFC user needed for RFC execution in the receiving system is locked, this can help to avoid any messages from accidentally reaching the source systems. The same effect can be achieved with temporarily locking all RFC users in the production systems while the target systems are started.

- Disable system connections / RFC destinations to prevent any communication from being issued by the system. Execute an SQL statement which invalidates the hostnames respectively the IP address in the main RFC connections table, for example by adding a suffix '.copy' or a prefix '#' to the hostname / IP address. The hostname / IP address is contained in field RFCOPTIONS of table RFCDES.
  This step can help to prevent any messages from being transferred from the target to the source environment. The actual adjustment of the destinations to their final values (the real servers of the target environment) is done later in step 6.4 using the official SAP transaction SM59.

Step 6.3	Target	Start target system	⬆

Task of step

Start the SAP WebAS based systems of the target landscape so the follow-up activities can be done in the SAP system.

What to do

Start the SAP WebAS server.

Step 6.4	Target	Adjust system connections	⬆

Task of step

The main purpose of this step is to adjust the parameters responsible for communication between the systems of the target landscape.

With scenario "***Minimum Risk***" the systems of the target landscape are unable to communicate with each other because RFC destinations point to nonexistent servers and the inbound and outbound queues are unregistered.

With scenario "***PRD → PRD***" the communication settings need to be checked and adapted to the new servers.

With all other scenarios it is vital to prevent the target system from communicating with the productive environment.

What to do

Adapt, disable or delete __all interfaces__ to any systems of the production environment.

For example, use transaction SM59 to adapt all RFC destinations and other communication entries and make sure that the correct target host names of the NPS landscape and the corresponding user logon data are used.

- The following table provides an overview of possible interfaces or connections that need to be checked:

Connection type	To be maintained with
RFC and R/3 connections	SM59
HTTP	SM59
TCP/IP	SM59
Registered programs	SM59
Java connector (JCO connection)	SM59 and Visual administrator
Trusted/Trusting Systems	SM59, SMT1, SMT2
R/2 connections	SM59
CPIC	SM59
SAP XI communication	SM59 and Integration Directory
Adapters	
File	
Batch input	
DB links	
Archive link	
SAP phone	
SAP connect	
Email	

- Check or create RFC users and passwords to be used in the NPS environment.
  We recommend defining different RFC users in the NPS landscape than in production. This can help to protect against NPS messages being executed in production using the production RFC users (e.g. in case it was forgotten to change the server name or IP address).

- Execute connection check in SM59 to verify that the new settings are valid

- If trusted/trusting system connections are used between SAP systems in your landscape, these need to be deleted or adapted. Check transactions SMT1 and SMT2. Trusting relations can be deleted be deleting the contents of tables RFCSYSACL and RFCTRUST.

- Restart the SAP system after making all the above changes

⚠️

Make sure that no communication entries point to hosts of the production landscape.

💡

We recommend that you change RFC physical destinations (host names and IP addresses) but <u>not</u> the RFC destination name. If you want to change the names of the RFC destinations, check all the Configuration Guides corresponding to your scenarios and perform all the required Customizing steps.

⚠️

If ALE is used in the target landscape:

Do not create new RFC destinations and logical systems in the target landscape! ALE may be used, for example, for exchanging IDocs between the systems, downloading organizational units from the backend OLTP system, or for central user administration. If new destinations are created, ALE distribution no longer works. If ALE is used, only the values and parameters such as the host names, IP addresses, and logon data within the existing RFC destinations should be modified to match the target environment.

Since the setups for SAP solution landscapes are different for each individual case, it is impossible to give full recommendations on maintaining RFC destinations in this document. SAP Configuration Guides provide detailed information on maintaining the RFC destinations for each individual solution. Check the guides corresponding to your solutions and maintain the RFC destinations as recommended.

Also see the solution-specific [*SAP System Landscape Copy Notes*] since they may also provide information on the connections used be these solutions.

Step 6.5	Target	Execute follow-up activities from [System Copy Guide]	⬆

Task of step

Do further cleanup actions in SAP WebAS-based systems. Similar to the connections dealt with in the previous step 6.4, some of these actions are critical concerning integrity of the production landscape. Special care must be taken that these actions are executed to prevent damage to the production environment.

⚠️

Do not change logical system names yet if there are pending messages to be processed. This will be done in step 6.7.

💡

Some of the actions to be done below may be substituted by step 6.9 "Import saved information from before the refresh" (also see step 2.1).

What to do

Execute the follow-up activities on SAP system level for ABAP and JAVA, as described in the [System Copy Guide] and [System Copy Guide - JAVA for 6.40].

For scenario "**PRD → PRD**", most of those actions may be obsolete.

For system copy "*PRD → NPS*", several of these actions are critical for avoiding any interference with the production systems or to prevent the target system from behaving like production. Take special care with executing the following actions:

- Adapt transport settings (TMS)

- Check batch jobs

- Adapt printers, check print jobs

- Modify users and authorizations

- Adapt logon groups and application servers

- Check external commands

Additionally execute the other actions for the **ABAP stack** as listed in [System Copy Guide], if applicable to your system.

When copying a SAP WebAS system with **JAVA stack**, also perform the actions described in section "Performing Follow-Up Activities for Java" of the [System Copy Guide] (NW2004s) or in section "Follow-Up Activities on the Target System" of the [System Copy Guide - JAVA for 6.40] (WebAS 6.40). Also see SAP note 870863 (NW2004s) or 785848 (WebAS 6.40).

Some of these actions for the JAVA stack are critical for avoiding any interference with the production systems as well, especially connections to source landscape components like:

- Configuration of JCo

- EP connections for TREX, Repository Managers, Collaboration

- BI-JAVA source system connection

For a **Unicode conversion**, also check the Unicode Conversion Guide for special follow-up activities (see SAP note 548016)

Step 6.6	Target	Process pending messages	⬆

→ not required if the queues were empty on the source system before doing the copy

Task of step

If the source system was copied with non-empty queues, pending communication messages need to be exchanged to ensure data consistency in the target landscape. To allow processing of these messages, the logical system names in the target landscape may not have been changed yet because the messages might rely on the old logical system names.

⚠️

Do not start the queues before adjusting the RFC destinations (step 6.4).

In scenario "*PRD → NPS*" make sure that the target systems are separated from the source landscape.

⚠️

The logical system names may not be changed before this step.

Otherwise pending messages cannot be processed.

⚠️

SAP XI System

You may not process messages in status "scheduled for outbound processing"!

Since these messages already went through receiver determination, the receiver hostname is already contained in the message. Such messages would always go into the production landscape when processed on the target SAP XI system.

💡

This step is not required if you don't require data consistency between the systems of the non-productive target landscape.

In that case, you can simply delete pending messages from the queues in the target systems.

What to do

This step consists of several actions to be executed:

1. Register and start the inbound and outbound queues on all copied systems

Unregistered outbound destinations can be registered with transaction SMQS. Locked outbound queues can be unlocked using transaction SMQ1 or report RSTRFCQ3. Processing of outbound queues can be started with transactions SMQ1 (qRFC) and SM58 (tRFC) or report RSQOWKEX.

Unregistered inbound queues can be registered with transaction SMQR. Locked inbound queues can be unlocked using transaction SMQ2 or report RSTRFCI3. Processing of inbound queues can be started with transaction SMQ2 or report RSQIWKEX.

To avoid starting queues that had been unregistered in the source system even before the copy, it may be helpful to check the screenshots made for these transactions before the system copy in order to get the correct status for each individual queue.

You only need to process those message queues which are relevant for the target landscape (for example only few mobile client queues may be needed in an NPS environment).

2. Monitor the queues, correct the errors and wait until the queues are empty

Monitor if all queues are processed correctly and correct any errors.

Check the RFC queues using transactions SMQ1 for the outbound and SMQ2 for the inbound queues or use any solution specific monitoring tools.

To prevent the creation of new entries, there must be no workload in the system. Make sure that nobody is logged on and no background jobs are running.

3. Check that all queues are empty

Check that all inbound and outbound queues are empty in all systems of the target landscape.

Step 6.7	Target	Convert logical system names	⬆

→ not applicable for scenario "***PRD → PRD***"

Task of step

You might want to change the logical system names used in the target environment, for example if the logical system names contain the production SIDs. From a technical point-of-view there is no requirement to change logical system names, it is only important to ensure that the underlying RFC destinations are adapted for the target landscape.

> Please see the discussion of Risk 3 above when you consider converting logical system names.

What to do

Make sure that the queues are empty and all the entries that refer to the old logical system names were processed. We can now assume that the systems are in a consistent state.

When converting logical system names, there should be no other activities or communication going on in the system. Following the system copy procedure described in this Best Practice, the target system is still locked (step 6.2) and any pending messages were processed (step 6.6), so these prerequisites should be ensured at this point in time. Otherwise, to prevent any data exchange during the conversion, the connection between the systems should be disabled once again by executing the actions as described in step 3.5.

Now execute the following actions to adapt the logical system names:

1. Convert the logical system names

Transaction BDLS converts the logical system names in all application and customizing tables.

See SAP note 121163 for more information. To obtain the latest version of the transaction BDLS, see SAP Note 369758.

> * Never change the logical system names in production systems!
>
> * Before you run transaction BDLS, check the online documentation.
>
> * During a run of the changing transaction, no other activities should be performed anywhere in the system, and there should be no communication with other systems.
>
> * The processing of all IDocs in the system must be completed, since the logical system name may be contained in the IDoc data record and this is not modified by the change transaction.
>
> * Avoid making manual changes to logical system names in the relevant tables. Otherwise the application documents can no longer be fully located - use only transaction BDLS!

Activities:

* Start transaction BDLS and
    * enter the old and the new logical system names
    * select "**Conversion of Client-Dependent and Client-Independent Tables**"
    * select "Existence Check of New Names in Tables"

  Note: You can start the transaction first as a test run. In this case, no conversion is performed but only the list of relevant tables is displayed.

* Transaction BDLS must be run **for each logical destination** that is to be changed.

* Transaction BDLS must be run **for every client** where destinations are to be changed. The logical system name is an attribute that can be set for every client.

* Transaction BDLS must be run **on all connected clients on other systems** of the landscape.

Example:

If you have for example two source R/3 clients R3**P**CLNT001, R3**P**CLNT002 and one source CRM client CR**P**CLNT800 which are connected, you have to execute transaction BDLS in the target landscape 9 times as follows:

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- In target client R3**Q**CLNT001:
  - o Rename R3**P**CLNT001 to R3**Q**CLNT001
  - o Rename R3**P**CLNT002 to R3**Q**CLNT002
  - o Rename CR**P**CLNT800 to CR**Q**CLNT800
- In target client R3**Q**CLNT002:
  - o Rename R3**P**CLNT001 to R3**Q**CLNT001
  - o Rename R3**P**CLNT002 to R3**Q**CLNT002
  - o Rename CR**P**CLNT800 to CR**Q**CLNT800
- In target client CR**Q**CLNT800:
  - o Rename R3**P**CLNT001 to R3**Q**CLNT001
  - o Rename R3**P**CLNT002 to R3**Q**CLNT002
  - o Rename CR**P**CLNT800 to CR**Q**CLNT800

2. Delete the old logical system names

During the conversion of the logical system names, the old system names are not changed. Instead, only the new system names are entered. The old logical system names must now be deleted.

Start transaction BD54 and delete all the old logical system names that were changed in the previous step. This must also be done on all systems of the target landscape.

3. Check the new logical system names

Check that the automatic conversion assigned the new logical system names correctly to the corresponding clients.

You can start the transactions for example via the following path:

SAP R/3: *SPRO → IMG → Basis Components → Distribution (ALE) → Sending and Receiving Systems → Logical Systems → Assign Client to Logical Systems*

Please also see solution specific [*SAP System Landscape Copy Notes*] to find out if there are special tools available.

Step 6.8	Target	Do solution-specific adjustments	↑

Task of step

Most SAP solutions require additional actions to be done after a system copy. These solution-specific actions are not described in the [System Copy Guide].

What to do

Execute the actions listed in the solution-specific [*SAP System Landscape Copy Notes*] for the SAP solutions you are copying.

Step 6.9	Target	Import saved information from step 2.1	↑

→ Applicable for **Refresh** of the target landscape.

Task of step

Provide the new target system with any information that was saved from the old target system before doing the refresh.

What to do

Import or enter the information saved in step 2.1 into the new target system.

Step 6.10	Target	Register queues	⬆

Task of step

If the message queues were not already enabled during step 6.6, the queues must now be registered to allow message processing in the target environment.

What to do

Register the inbound and outbound queues as described in step 6.6, item 1. Starting the queues should not be necessary since there should be no queue entries waiting to be processed.

Note that not all queues may need to be registered since some might have been in status unregistered even in the source environment. Use the original screenshots of transactions SMQS and SMQR to get the correct states.

Step 6.11	Target	Install new SAP license	⬆

Task of step

After migrating a SAP WebAS based system to another hardware (scenario PRD → PRD), you need a new SAP license for the system. You also need a new license for a new NPS system. When refreshing an NPS system, the existing license needs to be reinstalled into the NPS system.

What to do

Install the correct license for your target system with transaction "slicense" or operating system command "saplicense – install". This command can also be automated using an input file "saplicense - install ifile=<file>". See SAP note 870871 for more information.

Step 6.12	Target	Install and configure additional components	⬆

→ Applicable for **New Installation** of the target landscape.

Task of step

Currently, there is no specific procedure for copying non-WebAS components of a system landscape. Such components should be newly installed in the target landscape and configured as required.

What to do

Install any required non-WebAS based components of the landscape as listed in the solution-specific SAP notes. To obtain the detailed procedures for installing and configuring the components, refer to the installation and configuration guides for the individual components. For configuration of these components, you can also compare the configuration of a component in the target landscape with configuration of the same component in the source landscape.

> For some non-WebAS based components, it may be desired (or even required) to install them in the target landscape before copying the SAP WebAS based systems. Shifting these steps to the preparation phase 2 can help to reduce the time until the target landscape becomes available for operations after the main copy phase. Please consult the specific installation guides for information on the possible order of installations.

> Even with scenario "**Minimum Risk**" and when postponing the restart of the source landscape until the cleanup on the target is completed (which means executing phase 5 after phase 6), the production (source) systems can be restarted before installing these components in the target landscape. This will reduce downtime on production.

Step 6.13	Target	Check and adjust integration to other components	⬆

Task of step

Any components of the target landscape may need to be adapted to the changes in the environment. These usually are

- components that were not included in the copy process or
- already existing components that now shall be used together with some newly copied (installed) components.

Components that are included in the scope of the copied landscape should already have been adjusted in steps 6.4, 6.8 or 6.12.

What to do

Change configuration settings of these components as required. See solution specific SAP notes or installation and configuration guides for these components.

Step 6.14	Target	Load or initialize data in additional components	⬆

→ Not applicable for scenario "***PRD → PRD***"

Task of step

Non-WebAS based components of the landscape can also hold data. After installation or when refreshing the target landscape, these components also need to be provided with data that is consistent to the rest of the landscape. This can usually be done by (re-)loading the data from other (usually SAP WebAS based) components.

What to do

See solution-specific [*SAP System Landscape Copy Notes*] for more information on the components that need to be initialized and loaded during system landscape copy of an SAP Solution.

Step 6.15	Target	Check operability and data consistency	⬆

Task of step

After completing the system landscape copy you may want to verify that the copy is fully operational and that the copied data is consistent.

What to do

- Check that each single component of your landscape operates in accordance with its tasks. For each component you should check its availability, configuration and ability to connect to other components. In case of problems, check the relevant configuration or installation guides and compare the affected component with the same one in the source landscape.

- Cross-check the configuration guides to ensure that the Customizing in the new landscape is fully completed.

- Especially with scenario "***PRD → PRD***", it is recommended to also do performance tests in the new environment.

- Especially with scenario "***PRD → PRD***", update the database statistics in the new environment.

- Run consistency checks as described in [System Copy Guide], [System Copy Guide - JAVA for 6.40] and in the solution-specific [*SAP System Landscape Copy Notes*]

- Let test users check the functionality of main transactions and business scenarios.
  To do so, you should prepare procedure templates for business processes and other normal

tasks. These procedure templates should enable you to monitor the execution of each step and verify the consistency of your data.

Step 6.16	Target	Release target landscape for operations	⬆

Task of step

Now the target landscape can be released to operations. Any precautions that were taken to prevent user activities before finishing the complete copy procedure now need to be reverted.

What to do

Release the target systems by

- Unlocking those users permitted in the target system

- Reversing the actions taken in step 6.2 above

Further Information

Information on System Copy tools and technologies:

- http://service.sap.com/systemcopy

- http://service.sap.com/instguides

- http://service.sap.com/split-mirror

- http://service.sap.com/atg

You can get further assistance with developing a strategy for System Landscape Copy through the SAP Optimization Service "SAP Continuity Management". Please see the SAP Service Catalog at http://service.sap.com/servicecat for more information.

Feedback and Questions

To improve the quality of this Best Practice and the System Landscape Copy procedure, we are depending on your feedback. Please send any feedback concerning errors or possible optimizations of this document to atg@sap.com, Subject "System Copy Guide - Feedback". **Please note that we do not provide support for problems with the system copy procedure at this email address!** Please use SAP's customer support systems to get help with any issues during execution of the copy procedure. Please use components BC-INS-UNX, BC-INS-NT, BC-INS-AS4 for homogeneous system copy or BC-INS-MIG for heterogeneous system copy.

You can report general issues with SAP Best Practices by formulating an SAP customer message to component SV-GST-SMC. You can do this at http://service.sap.com/message.