

## **Application Operations Guide**

SAP Landscape Transformation Replication Server  
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**CUSTOMER**

# **SAP Landscape Transformation Replication Server**

**For SAP HANA Platform 2.0 SPS04**



# Typographic Conventions

Type Style	Description
<i>Example</i>	Words or characters quoted from the screen. These include field names, screen titles, pushbuttons labels, menu names, menu paths, and menu options. Textual cross-references to other documents.
<b>Example</b>	Emphasized words or expressions.
EXAMPLE	Technical names of system objects. These include report names, program names, transaction codes, table names, and key concepts of a programming language when they are surrounded by body text, for example, SELECT and INCLUDE.
Example	Output on the screen. This includes file and directory names and their paths, messages, names of variables and parameters, source text, and names of installation, upgrade and database tools.
<b>Example</b>	Exact user entry. These are words or characters that you enter in the system exactly as they appear in the documentation.
<Example>	Variable user entry. Angle brackets indicate that you replace these words and characters with appropriate entries to make entries in the system.
EXAMPLE	Keys on the keyboard, for example, F2 or ENTER.

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# Document History



## Caution

Make sure you use the **current** version of the Application Operations Guide.

The current version of the Application Operations Guide is at <http://help.sap.com/sapsit> on the SAP Help Portal.

Version	Date	Change
1.0	2019-01-28	Initial version for DMIS 2018 SP01
1.1	2019-09-09	Updated version for DMIS 2018 SP02
1.2	2020-02-26	Updated version for DMIS 2018 SP03

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# 1 Getting Started



## Caution

This guide does not replace the daily operations handbook that we recommend customers to create for their specific production operations.

## 1.1 About this Guide

Designing, implementing, and running your SAP applications at peak performance 24 hours a day has never been more vital for your business success than now.

This guide provides a starting point for managing your SAP applications and maintaining and running them optimally. It contains specific information for various tasks and lists the tools that you can use to implement them. This guide also provides references to the documentation required for these tasks, so you will sometimes also need other Guides such as the Master Guide, Technical Infrastructure Guide, and SAP Library.

### Target Groups

- Technical Consultants
- System Administrators
- Solution Consultants
- Business Process Owner
- Support Specialist

## 1.2 Global Definitions

### SAP Application

A SAP application is an SAP software solution that serves a specific business area like ERP, CRM, PLM, SRM, and SCM.

### Business Scenario

From a microeconomic perspective, a business scenario is a cycle, which consists of several different interconnected logical processes in time. Typically, a business scenario includes several company departments and involves with other business partners. From a technical point of view, a business scenario needs at least one SAP application (SAP ERP, SAP SCM, or others) for each cycle and possibly other third-party systems. A business scenario is a unit which can be implemented separately and reflects the customer's prospective course of business.

## Component

A component is the smallest individual unit considered within the Solution Development Lifecycle; components are separately produced, delivered, installed and maintained.

## 1.3 Important SAP Notes



Caution

Check regularly for updates available for the Application Operations Guide.

### Important SAP Notes

SAP Note Number	Title	Comment
<a href="#">1605140</a>	Central Note - SAP LT Replication Server	Collective Note for all the relevant Notes for LT Replication Server for HANA
<a href="#">2874697</a>	Release Information SLT - DMIS 2018 SP03	This SAP Note describes the installation or upgrade of SAP Landscape Transformation Replication Server to the relevant DMIS SP.
<a href="#">1768805</a>	SAP LT Replication Server: Collective Note - Non-SAP Sources	Collective Note that describes details about using the SAP LT Replication Server for non-ABAP source systems

## 1.4 SAP Landscape Transformation Replication Server Guides and Resources

The following table contains useful links to related guides:

Guide	Location
Security Guide - Replicating Data to SAP HANA	<a href="http://help.sap.com/sapslt">http://help.sap.com/sapslt</a>
Installation Guide – Replicating Data to SAP HANA	<a href="http://help.sap.com/sapslt">http://help.sap.com/sapslt</a>
Sizing Guide	<a href="http://help.sap.com/sapslt">http://help.sap.com/sapslt</a>
Performance Optimization Guide	<a href="http://help.sap.com/sapslt">http://help.sap.com/sapslt</a>
SAP Landscape Transformation Replication Server on SAP Community Network (SCN)	<a href="http://scn.sap.com/community/replication-server">http://scn.sap.com/community/replication-server</a>

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## 2 Basic Concepts and System Landscape Options

### 2.1 Basic Concepts of Trigger-based data Replication using SAP LT Replication Server

SAP Landscape Transformation Replication Server (SAP LT Replication Server) is the SAP technology that allows you to load and replicate data in real-time from ABAP-based SAP source systems and non ABAP-based source systems to different target systems such as SAP HANA, SAP Central Finance, SAP VORA, SAP BW and so on.

SAP LT Replication Server uses a trigger-based replication approach to pass data from the source system to the target system.

Typically, SAP LT Replication Server is deployed on an SAP NetWeaver system and requires the installation of the DMIS add-on. However, it is also possible to run SAP LT Replication Server on an SAP S/4HANA system. In this case, as SAP LT Replication Server is part of SAP S/4HANA, the installation of the DMIS add-on is not required in the SAP S/4HANA system. Note that if you are running SAP LT Replication Server on SAP S/4HANA, only a limited number of scenarios (target systems) are supported. For more information, see SAP Note [1605140](#).

In order to replicate data, you must first define the parameters that the SAP LT Replication Server will use to replicate data from one or more source systems to one or more target systems. You specify this information in a [Configuration](#). A configuration contains information about the source system, the target system, and the relevant connections. You define configurations in the SAP LT Replication Server system.

You use a configuration to load and replicate data from one source system to one target system (1:1), or from multiple source systems to one target system (N:1). In addition, it is possible to load and replicate data from one source system to multiple (up to 4) target systems (1:N).

For SAP HANA target systems, the described options apply also for database schemas. You use a configuration to load and replicate data from one source system to one target database schema of a HANA system (1:1), or from multiple source systems to one target database schema of an SAP HANA system (N:1). Furthermore, it is possible to load and replicate data from one source system to multiple (up to 4) target database schemas of one or more SAP HANA systems (1:N).

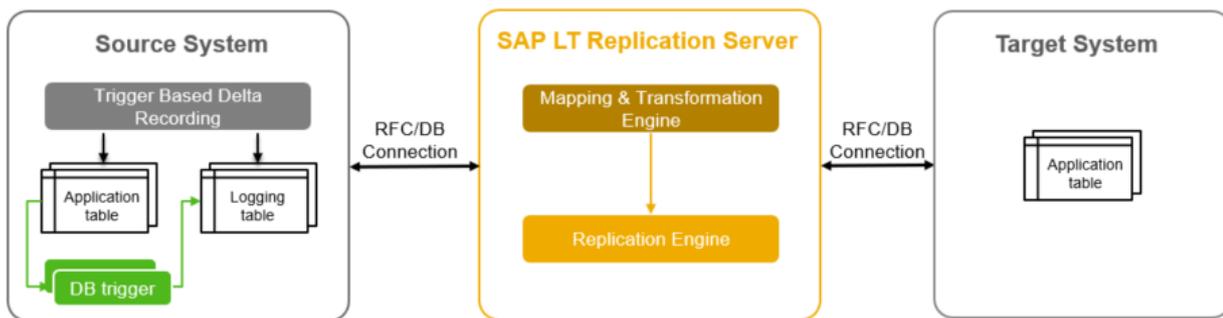
For any target system, you can also specify the type of data load and replication - either in real-time or scheduled by time or by interval.

#### Note

By default, a maximum of one 1:1 configuration is possible for a source system. If more 1:1 configurations are required for a source system, set the value of the field MULTI\_1\_1 to X in table IUUC\_RT\_PARAMS in the SAP LT Replication Server system.

The trigger-based data replication approach is a table-based concept that retrieves data from application tables in the source system (or source systems). If not all data records of a table should be transferred, you can create transformation rules to selectively filter the data (selective data replication) or to enable other transformations during the data replication process.

The following graphic outlines the basic concept using the trigger-based data replication approach of SAP LT Replication Server:



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## 3 Operating SAP LT Replication Server

This section provides an overview of the transactions and tools you use to define a configuration and related table settings. It also includes basics about the SLT-based replication concept which is key to understanding important SAP Landscape Transformation Replication Server-related operational aspects.

### 3.1 Prerequisites

Before you can create a configuration and start the data replication, you have to install the required software and establish related system connections with appropriate user authorizations.

For more information, see the relevant installation and security guides on the SAP Help Portal at <http://help.sap.com/sapslt>, as well as in the specific SAP Notes listed below.

The Sizing Guide for SAP Landscape Transformation Replication Server provides detailed information about how to calculate the necessary system resources for a given configuration. For more information, see <http://help.sap.com/slt>

### 3.2 Important Transactions

SAP Landscape Transformation Replication Server provides the tools required to establish connections between source and target systems, and to specify how data should be replicated between them. SAP Landscape Transformation Replication Server also provides detailed monitoring features that reduce system administrative effort, and expert functions that allow you to fulfill complex business requirements.

The following sections outline the various components of the application:

#### 3.2.1 SAP LT Replication Server Cockpit

You use the SAP LT Replication Server Cockpit to get a detailed overview of the initial load and the replication process, and to troubleshoot issues that may arise. You can use SAP LT Replication Server Cockpit to create

configurations, manage and monitor the initial load and the replication process, and to access expert functions. You can access the SAP LT Replication Server Cockpit by using transaction LTRC.

The SAP LT Replication Server Cockpit contains the following tabs:

Tab	Description
Administration Data	<p>You can view general information, such as the name of the configuration, the replication scenario, and details about the source and target systems. In addition, you can view the status of the configuration, for example, <i>Running</i> or <i>Finished</i>. You can also activate and deactivate the configuration as required. Note that all configurations are handled by one master job, and this master job only stops if no configurations are active.</p> <p>You can also view and change the number of jobs that are running.</p>
Processing Steps	<p>The <i>Processing Steps</i> tab contains all the steps required to manage the initial load or the replication process. These steps should only be executed in exceptional situations, for example, as part of a troubleshooting process. Managing the replication process is normally done by using the Data Provisioning feature on the Table Settings tab, or controlled externally, as is the case for example when replicating data to SAP BW by using the ODP framework.</p>
Table Overview	<p>On the <i>Table Overview</i> tab, you can view all tables that are part of the initial load or part of the replication process. This tab contains two tables. The first table contains details about the number of tables, for example, you can view the number of tables that are in process, or whether any tables have failed. The second table contains information about the individual tables.</p> <p>You can also control the replication process. To do so, choose <i>Data Provisioning</i>. Note that you can only control the replication process if you are replicating data to a database using a database connection or replicating data to an ABAP-based SAP target system using an RFC connection. If any errors exist for a table, you can view detailed information about the error by choosing <i>View Errors</i>.</p>
Data Transfer Monitor	<p>As soon as the load or replication object is created, you can view the corresponding table on the <i>Data Transfer Monitor</i> tab.</p>

Tab	Description
	<p>This tab contains two tables. The first table contains details about the number of tables, for example, the number of tables that are loaded or replicated. The second table contains information about the individual tables.</p> <p>If any errors exist for a table, you can view detailed information about the error by choosing View Errors.</p>
Application Logs	<p>On the tab <a href="#">Application Logs</a>, you can view the logs for the initial load and for the replication process. You can also view the logs by using transaction SLG1.</p>
Load Statistics	<p>On the tab <a href="#">Load Statistics</a>, you can view runtime information (for example, the number of loaded portions, runtime statistics, and so on) for tables that are part of the initial load.</p>
Expert Functions	<p>On the tab <a href="#">Expert Functions</a>, you can execute troubleshooting activities. You can, for example, reset the status for a table, or change the connection settings to the target system.</p>

### More Information

In the SAP LT Replication Server Cockpit, you can view detailed information about these tabs by choosing the [Information](#) button.

### Options for Logging Tables

In the menu, under [Utilities](#), there is the option [Specify Option for Logging Tables](#). If you choose this option, the system displays a dialog box where you can specify options for how SAP LT Replication Server processes the logging tables. Detailed documentation is available in the [Options for Logging Tables](#) dialog box.

Note that this option is not relevant for the Central Finance – Business Integration scenario. For more information about this scenario, see SAP Note [2223621](#).

## 3.2.2 Advanced Replication Settings

You can specify advanced replication settings that allow you to fulfill complex business requirements and improve performance. For example, you can:

- Modify target table structures
- Specify performance optimization settings
- Define transformation rules

There is a specific transaction, `LTRS`, for working with advanced replication settings. For a configuration, you can specify these settings for specific tables. You can specify the following types of settings:

Settings	Description
Performance Options	You can optimize the performance of the initial load and the replication process for individual tables.
Rule Assignment	You can specify mapping rules that are executed during the replication process.
Table Settings	You can change the structure of a target table.
Trigger Options for Source System	You can customize the code for the database triggers that record changes to the source system tables.
INDX-like Table Settings	SAP Landscape Transformation Replication Server can facilitate the transfer of data from a specific logical area in an INDX-like table to the target system in a readable format.
Replication Logging	You can specify settings for replication logging. If replication logging is active, the system saves the replicated data entries in the SAP Landscape Transformation Replication Server system. This means that if any data is missing from the target system, you can view this data and replicate it again from the SAP Landscape Transformation Replication Server system to the target system.

In *Advanced Replication Settings*, you can view detailed information about these settings by choosing the *Information* button.

### 3.3 Creating a Configuration

In order to replicate data, you must first define the parameters that SAP Landscape Transformation Replication Server will use to replicate data from a source system to a target system. You specify this information in a configuration. A configuration contains information about the source system, the target system, and the relevant connections. You create a configuration by using the SAP Landscape Transformation Replication Server Cockpit (transaction `LTRC`) in SAP Landscape Transformation Replication Server system.

When creating a new configuration in the SAP LT Replication Server system, a mass transfer ID (`MT_ID`) is automatically created and assigned to the configuration. The mass transfer ID is used in the naming of SAP LT Replication Server jobs. With the mass transfer ID, the system can uniquely identify a schema.

For detailed information about how to create a configuration, see the SAP LT Replication Server application help on the SAP Help Portal (<http://help.sap.com/slt>).

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## **i** Note

You cannot change the name of a configuration after it is created. If you are replicating data to a database schema, it is also not possible to change the name of the schema in the target system.

## 3.4 Managing the Replication Process Using Transaction LTRC

Once a configuration is created in the SAP Landscape Transformation Replication Server system, you use the SAP Landscape Transformation Replication Server Cockpit (transaction `LTRC`) to initiate and control the table-based replication process. For detailed information about how to do this, see the SAP LT Replication Server application help on the SAP Help Portal (<http://help.sap.com/slt>).

## 3.5 Activating and Deactivating all Configurations

On the initial screen of the SAP LT Replication Server Cockpit (transaction `LTRC`), you can start or stop all replication configurations by using the *Activate All Configurations* or *Deactivate all Configurations* pushbuttons. This may be convenient when you want to begin or return from a system maintenance activity which requires the stop of SAP LT Replication Server, or if you want to start or stop the SAP LT Replication Server system.

## 3.6 Job Handling

### 3.6.1 Important SAP LT Replication Server Jobs

To understand the concept of the load and replication procedures in more detail, the following section explains the major type of jobs for SAP LT Replication Server.

#### **Dispatcher Job**

Naming Convention: `/LTB/JOB_DISPATCHER`

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The central job that schedules all SAP LT Replication Server jobs.

**i** Note

With 1809 FPS01, a new framework to schedule background jobs was introduced. If you are running SAP LT Replication Server on SAP S/4HANA, the technical job repository must be enabled in transaction SJOBREPO. For more information, see SAP Note [2190119](#).

## Master Controller Job

Naming Convention: /1LT/IUC\_REP\_CNTR\_<mtid>

This job is scheduled on demand and is responsible for:

- Creating database triggers and logging table in the source system.
- Creating synonyms.
- Writing new entries in admin tables in the SAP LT Replication Server system when a new table is loaded/replicated.
- Deleting the processed entries (tasks) from table RS\_ORDER.

**1** Note

Every day at midnight, data load jobs - but not the migration object definition or access plan calculation jobs – are automatically stopped and restarted immediately. This action has no negative impact on the ongoing data load and replication, it will simply resume immediately. This procedure simplifies a lot of log and job-related troubleshooting activities, for example by providing the option to filter by date in transaction SM37.

## Data Load Job

Naming Convention: /1LT/IUC\_LOAD\_MT\_<mtid>\_nnn

In case of a real-time replication, there is always at least one data load job active for each configuration. If the job does not complete successfully, the master controller job restarts it.

This job is responsible for:

- Loading data (load)
- Replicating data (replication)
- Changing status flag for entries in control tables in the SAP LT Replication Server

For more information, see section Data Load Jobs below.

## Migration Object Definition Job

Naming Convention: /1LT/IUC\_DEF\_COBJ\_<mtid>

This job defines the migration object of a specific table (that you choose to load/replicate), which is the fundamental object for replication. The migration object definition should normally be quite fast for all tables. In

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addition, this job creates runtime objects for a configuration (generated modules for data load or replication).

### Access Plan Calculation Job

Naming Convention: /1LT/IUC\_CALC\_ACP\_<mtid>\_n

This job calculates the access plan of a specific table (that you choose to load/replicate), and the access plan is used for data load or replication. The access plan is also a fundamental object for the replication. For an initial load, the access plan calculation might take some time as the whole table needs to be read. For the replication process, the access plan calculation however should complete relatively quickly.

### Notification Job

Naming Convention: /1LT/IUC\_STATNTFY

The notification job monitors the health checks that the system runs (Connection Check, Table Status Check, Replication Check, and so on) and sends e-mail notifications to specified recipients. You can specify settings for this job in transaction LTRC → *Expert Functions* → Specify settings for Health Checks and Notifications.

### Housekeeping Job

Naming Convention: /1LT/IUC\_HOUSKPNG

The housekeeping job deletes unnecessary or outdated data from the database. Mainly, this is data that is related to replication logging or deleted configurations (some data is deleted asynchronously). Furthermore, this job aggregates replication statistics.

It is scheduled regularly at midnight (for cleanup of global data) and when deactivating a configuration (for cleanup of configuration-specific data).

### Health Checks

In addition, there are health check jobs available. You can monitor these health checks in transaction LTRO, tab Health Check Results, or LTRC, tab *Application Logs*. For more information, see section [Monitoring of Load and Replication Process](#).

## 3.6.2 Data Load Jobs

Data transfer and data transformation processing in the SAP LT Replication Server system is accomplished by the background work processes of the underlying SAP NetWeaver ABAP application server. Each job occupies 1 background work process in the SAP LT Replication Server system. For each configuration, the parameter *Data Transfer Jobs* restricts the maximum number of data load job for each mass transfer ID (MT\_ID).

In total, a mass transfer ID (MT\_ID) requires at least 2 background jobs to be available, one data load job and one additional job for migration object definition, access plan calculation, master controller, health checks etc.

### Example

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If you set the parameter *Data Transfer Jobs* to 04 in a configuration "SCHEMA1", a mass transfer ID 001 is assigned. The four Data Transfer Jobs will follow the following naming convention: /1LT/IUC\_LOAD\_MT\_001\_001, /1LT/IUC\_LOAD\_MT\_001\_002, /1LT/IUC\_LOAD\_MT\_001\_003 and /1LT/IUC\_LOAD\_MT\_001\_004.

When configuring your data load or replication scenario, consider the following:

- Do not define more data transfer jobs than the number of available application server background work processes. If all available background work processes are already occupied by jobs, any other job will have to wait until a free work process becomes available. This can lead to long wait times until a new activity (for example creating triggers) starts and significantly increased latency times for data replication.
- The number of dialog work processes in the source system corresponds 1:1 with the number of data transfer jobs in the SAP LT Replication Server system.
- Besides the work processes allocated by the data transfer jobs you need to provide additional available work processes for controller and health check jobs, the migration objects definition, access plan calculation or to perform configuration changes, and so on.

Sizing for SAP LT Replication Server involves determining how many work processes are required to perform the initial load of data into the target system within an acceptable timeframe, and accomplish the change capturing and the transfer of data changes to the target system within expected latency times.

Ensure that you add enough additional work processes to allow other required SAP LT Replication Server jobs to run.

Finally, you map the number of required application server work processes to their system resource consumption (CPU, memory, disc space) using the formulas provided by the SAP LT Replication Server Sizing Guide.

With the simple formula below, you can calculate the number of required application server work processes (WPs) in the SAP LT Replication Server system for each active configuration.

The number of required work processes can be determined by adding:

- the number of required data transfer jobs,
- plus one additional empty background work processes (for health checks, email notification, controller, etc.)
- plus approx. as many dialog work processes as data transfer jobs

Note: A lack of available free application server work processes can negatively affect the data load or data replication processes.

### 3.6.2.1 Stopping and Restarting Jobs

In transaction `LTRC`, on the tab *Administration Data* you can activate or deactivate a configuration. If you deactivate a configuration, the initial load and / or the replication process will stop immediately – however, database triggers in the source systems will continuously record changes in the logging tables. If you activate the configuration, the data transfer jobs resume.

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## 3.6.2.2 Changing the number of Jobs

In transaction `LTRC`, on the tab *Administration Data* under *Job Options*, you can specify the number of Data Transfer Jobs, Initial Load Jobs, and Calculation Jobs.

You may want to change the number of the jobs for the following reasons:

- If you are not satisfied with the speed of the initial load and/or the replication latency time.
- If the SAP LT Replication Server system has more resources than initially available, you can increase the number of data transfer and/or initial load jobs.
- After completion of the initial load, you may want to reduce the number of initial load jobs.
- You can customize the number of access plans. The default setting is one, but you can define a higher number of access plan calculation jobs that can run in parallel.

### Note

There must be at least one free background job to be able to change any configuration settings.

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## 4 Monitoring of Load and Replication Process

SAP Landscape Transformation Replication Server offers different options for monitoring. For detailed monitoring information, as well as expert functions to resolve potential problems, you can use the SAP LT Replication Server Cockpit (transaction `LTRC`). In addition, you can use the Monitoring transaction (transaction `LTRO`) to get status information for multiple configurations in one central location

### 4.1 SAP LT Replication Server Cockpit (Transaction LTRC)

The SAP LT Replication Server Cockpit provides monitoring and troubleshooting capabilities for single configurations. In the SAP LT Replication Server Cockpit, the following tabs offer monitoring and troubleshooting functions:

- Table Overview
- Data Transfer Monitor
- Application Logs
- Load Statistics

For more information about these tabs, see section 3.2.1.

### 4.2 Monitoring Transaction (Transaction LTRO)

The monitoring transaction (transaction `LTRO`) runs on the SAP Landscape Transformation Replication Server system and can help system administrators get a faster overview about the participating systems and configurations. For example, you can use the monitoring transaction to get information about:

- The number of free batch and dialog processes, as well as the number of batch and dialog processes that are currently running for each SAP Landscape Transformation Replication Server system application server.
- The availability status for all connected target systems (for all selected configurations), and the corresponding log entries (warnings and errors).
- The status of multiple configurations on a single screen.

Even though you can use the SAP LT Replication Server Cockpit (transaction `LTRC`) to view the status of a single configuration, system administrators managing multiple configurations have to switch from configuration to

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configuration in order to see the relevant status. The benefit of using the monitoring transaction is that you can view all the relevant information on one screen.

The Monitoring transaction contains two tabs. The Overview tab contains SAP Landscape Transformation Replication Server system-specific information, as well as information about all connected target systems. On the Configuration View tab, you can view the status of the master job, and an overview of all selected configurations. To view detailed information about these tabs, choose the Information button.

## 4.2.1 Health Check Framework

There is a set of health checks that the system runs in order to alarm about unusual behavior of SAP LT Replication Server and potential issues or inconsistencies. Health Checks are either system checks or table checks.

The following health checks are available:

- **Master Job Check**  
Checks whether the master job is running.
- **Connection Check**  
Checks whether the connections to the source system and to the target system are working.
- **Job Activity Check**  
Checks whether all jobs are running.
- **Table Status Check**  
Checks the status of the relevant tables, and also checks whether triggers exist for the table in the source system.
- **Replication Check**  
Checks whether the replication process is running.
- **Logging Table Check**  
Checks whether a logging table exists for a table, and whether the number of entries in the logging table exceeds the defined threshold.
- **Latency Check**  
For tables that are part of the replication process, the system checks the length of time it takes for a change in the source system to be committed to the target system database, and whether the length of time exceeds the defined threshold.

### 4.2.1.1 Notifications for Health Checks

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It is important that the system administrator responsible for SAP LT Replication Server is notified of any issues regarding the replication process as soon as possible. To avoid permanent monitoring of the SAP LT Replication Server system, you can activate notifications for a configuration. If notifications are active for a configuration, the system uses a background job to check the configuration and the health check results periodically (the notification job).

In transaction `LTRC`, under *Expert Functions*, you can use function *Specify Settings for Health Checks and Notifications* to activate and configure notifications for health checks. In this function, you can view the check type (for example a system check or a table check), and the name of the check. To include the results of a check in the notification e-mail, select the respective checkbox in the Notifications active column. Note that SAPconnect must be configured for e-mail output. You can check this in transaction `SCOT`. You can also activate and configure notifications for health checks by using transaction `IUUC_REPL_EN`.

## 5 Backup and Recovery Aspects

You need to back up your system landscape regularly to ensure that you can restore and recover it in case of system outages or other failures.

The backup and restore strategy for SAP LT Replication Server consists of two parts:

1. Backup and restore coverage for each component (see table below)
2. Cross-system data dependencies and handling

The backup and recovery strategy for your system landscape should not only consider SAP systems but should also be embedded in overall business requirements and incorporate your company's entire process flow.

In addition, the backup and recovery strategy must cover disaster recovery processes, such as the loss of a data center through fire.

Situation	Consequences	Actions
Source system goes down	Replication is stopped SAP LT Replication Server waits for source system to be available again	Restart the source system SAP LT Replication Server will continue from where it stopped
SAP LT Replication Server goes down (or source system and SLT, if in the same stack)	Replication is stopped	Restart SAP LT Replication Server jobs
SAP HANA system goes down	Replication is stopped SAP LT Replication Server waits for HANA DB to be available again	Restart the HANA system SAP LT Replication Server will continue from where it stopped

If the source system or the SAP HANA system cannot be fully recovered to the same point in time, tables have to be dropped and reloaded into the SAP HANA system again to ensure data consistency between both systems. Therefore, the replication needs to be stopped and restarted for all tables of a schema from the SLT Based Table Data Provisioning screen in the SAP HANA Studio.

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## 6 Impact of Software Maintenance activities in ABAP Source Systems

Software maintenance activities (such as applying support packages or using the SAP transport management system TMS) in the source system may affect tables that have the status In Replication using active database triggers.

### Transport Analyzer for Trigger Conflicts

SLT provides a transport analyzer to identify if a table is affected by a structural change when certain transports are imported. As the program does not use any other DMIS objects you can install the program also on a system where no DMIS add on is installed.

The transport analyzer evaluates the selected transport request and identifies whether they contain any structural changes for database tables. The transport requests are checked whether they contain any of the following objects:

- \*Table
- \*Table Definition
- \*Table Type
- \*Table Type Definition
- \*Pool / Cluster Table
- \*Text Component of Table Type D
- \*Table Index
- \*Selection View
- \*View

As not every change for these objects might lead to a structural change to the database, the result list could be restricted to those tables which are activated within a certain time frame.

Note that the analysis may result in a few tables which are not really changed at database level, as the analysis works with the above objects and where-used lists. This means that if a change is done and discarded afterwards, the transport analyzer will still return it as a potential structural change.

### Recommendation how to deal with SLT Replication during a Software Maintenance Event:

If you use the correct SAP NetWeaver Basis Release, or the related SAP Notes for the related SAP NetWeaver Basis release, the created SAP LT Replication Server DB triggers will remain active during potential Data Dictionary changes (adding of non-key fields) or will be automatically deleted by the Data Dictionary tools.

Knowing this, you can in principle continue to have the triggers active and only need to re-load those tables where the triggers have been deleted during a software maintenance activity.

The SAP LT Replication Server checks for missing DB triggers and reports this error condition.

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## **i** Note

In case that XPRA's or After import Methods (AIMs) change data records on a larger table (usually a very rare case) you better stop the replication in order not to increase the upgrade processing time. Furthermore, in such a case a reload using parallel import processes is very likely much faster than continuing the replication after software maintenance.

### **Recommendation:**

In general SAP recommends for any SAP software upgrade/update activity as well as for imports of structural changes into a SLT source system that you stop the data replication from the concerned source system and start new replication processes (incl. initial load) after successful end of the software upgrade/update/import process. If this is not acceptable, because of a long runtime of initial load, a test upgrade should be performed on a comparable test system (i.e. a copy of production system) while keeping the DB triggers active. At the beginning of the downtime phases of the software maintenance process you should pause the replication by stopping the data transfer jobs (that is, suspend the replication) so that the DB triggers are still able to record changes. After the upgrade you need to analyze if triggers have been deleted and if there is a high volume of changes recorded in the remaining logging tables due to a XPRA/AIM run on the affected table. Only for those tables a new initial reload is necessary, for all other tables it is sufficient, that you restart the replication process so that the consuming system gets back in sync, then.

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## 7 Archiving Data in Source Systems

Data archiving is an important aspect of any productive operation. SAP Landscape Transformation Replication Server can support you with certain archiving requirements.

In the source system, archiving activities can result in the deletion of table records. However, you may not want these deletion operations to be executed in the target system. You can prevent such changes to the target system. In addition, SAP Landscape Transformation Replication Server can also facilitate the transfer of archived data to the target system.

### 7.1.1 Preventing Archive Deletes from being Replicated to a Target System

Archiving activities can occur in the source system at any time. If data is being replicated from a source system, it is important to understand the impact that any archiving activities can have on the target system. When SAP LT Replication Server replicates a table to the target system, it creates a database trigger that records any changes in a logging table. If a table is being replicated, and a record in the table is archived, the database trigger interprets the archiving operation as a DELETE statement, and SAP Landscape Transformation Replication Server deletes the corresponding record from the target table. However, you may want to prevent the record from being deleted in the target system.

If a user archives data from any table in the source system, you can prevent the data from being deleted from the corresponding table in the target system. To do this, proceed as follows:

1. In the SAP Landscape Transformation Replication Server system, open transaction LTRS (Advanced Replication Settings)
2. Under Trigger Options for Source System, select the relevant table.
3. Choose the Options for Archiving tab.
4. Under Action Taken if Source Table Record is Archived, choose the option Do Not Delete Corresponding Target Table Record.
5. Specify the relevant user (or users).

### 7.1.2 Transferring Archived Data to the Target System

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SAP Landscape Transformation Replication Server can transfer archived data to a target system. You can do this by using the report *Prepare Transfer of Archived Data to Target System* (IUUC\_CREATE\_ARCHIVE\_OBJECT).

In this report, you specify an archiving object and the relevant archive files – either by specifying a date range (the date on which the archive file was created), or a key that identifies one single archive file. For this archive object, the system identifies the relevant tables (that is, the tables that belong to the archive object, and that are relevant for the initial load or the replication process). For these tables, you can add the archived data (from the selected archive files) to the transfer. This means that for these tables, the system retrieves data from the archive, and transfers this data to the target system. For detailed information about how to use the report, run the report and choose *Program Documentation*.

Note that certain Information Lifecycle Management APIs must be available in the ABAP-based SAP source system. For more information, see SAP Note [1652039](#).

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# 8 Replication Logging

## 8.1 Overview

Note that the information described in this section is only relevant if the SAP LT Replication Server system is connected to a target system by means of a database connection.

When a table is replicated to the target system, the replicated data can also be saved to database tables in the SAP LT Replication Server system for a configurable period of time. This means if any data is missing from the target system (for instance after a point-in-time recovery of the target system to a previous state), you can view this data and replicate it again from the SAP LT Replication Server system to the target system.

## 8.2 Prerequisites

This activity is relevant only for configurations for which the checkbox *Activate Replication Logging* was selected when the configuration was created. If you choose this option, the replicated data packages from all tables which are in replication mode within this configuration will be saved in the SAP LT Replication Server system.

## 8.3 Changing the Replication Logging Settings

You can use transaction `LTRS` (Advanced Replication Settings) to activate replication logging for an existing configuration. You can also deactivate replication logging here.

Under *Replication Logging*, you can specify settings for replication logging. If replication logging is active, the system saves the replicated data entries in the SAP LT Replication Server system. This means that if any data is missing from the target system, you can view this data and replicate it again from the SAP LT Replication Server system to the target system.

By default, replication logging applies to all tables in a configuration. Under *Table-Specific Settings*, you can activate replication logging for specific tables in a configuration. You can also change the recording interval for the tables.

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## 8.3.1 Operational Considerations

Replicated data packages are stored in database tables in the SAP LT Replication Server for a configurable period of time. The default retention time is 3 days. Data packages which have been read from SAP cluster tables are stored in table `IUUC_RL_DATA_CL`. All other data packages (originating from transparent and SAP pool tables) are stored in table `IUUC_RL_DATA`.

### Note

Storing the replicated data packages in the SAP LT Replication server system requires sufficient space in the underlying database. Data growth in the tables mentioned above needs to be carefully monitored and managed and is dependent from the number of tables that are in replication logging state, the chosen data retention period, and the volume of data changes on the concerned source tables.

### 8.3.1.1 Display and Retransfer Replicated Data Packages

You can display and, if necessary, retransfer already replicated data packages by the expert function [Logged Replication Data](#) in the SAP LT Replication Server Cockpit. To view the documentation for this activity, select it and choose the [Documentation](#) pushbutton.

[www.sap.com/contactsap](http://www.sap.com/contactsap)

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