Administration Guide **CUSTOMER**

SAP Customer Activity Repository retail applications bundle
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SAP Customer Activity Repository 2.0 SP4 Operations Guide

Content

1 Getting Started

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

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 Installation Guide, Security Guide, and SAP Library.

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.

Important SAP Notes

> **Caution**
>
> Check regularly for updates available for the Application Operations Guide.

Table 1:

SAP Note Number	Title	Comment
1719282	POS TLOG Table Partitioning Information	Note describing partitioning of the `/POSDW/TLOGF` table.

2 Technical System Landscape

The following diagram provides an overview of SAP Customer Activity Repository, illustrating the different components of the repository, optional data replication, as well as the integration with consuming and receiving applications.

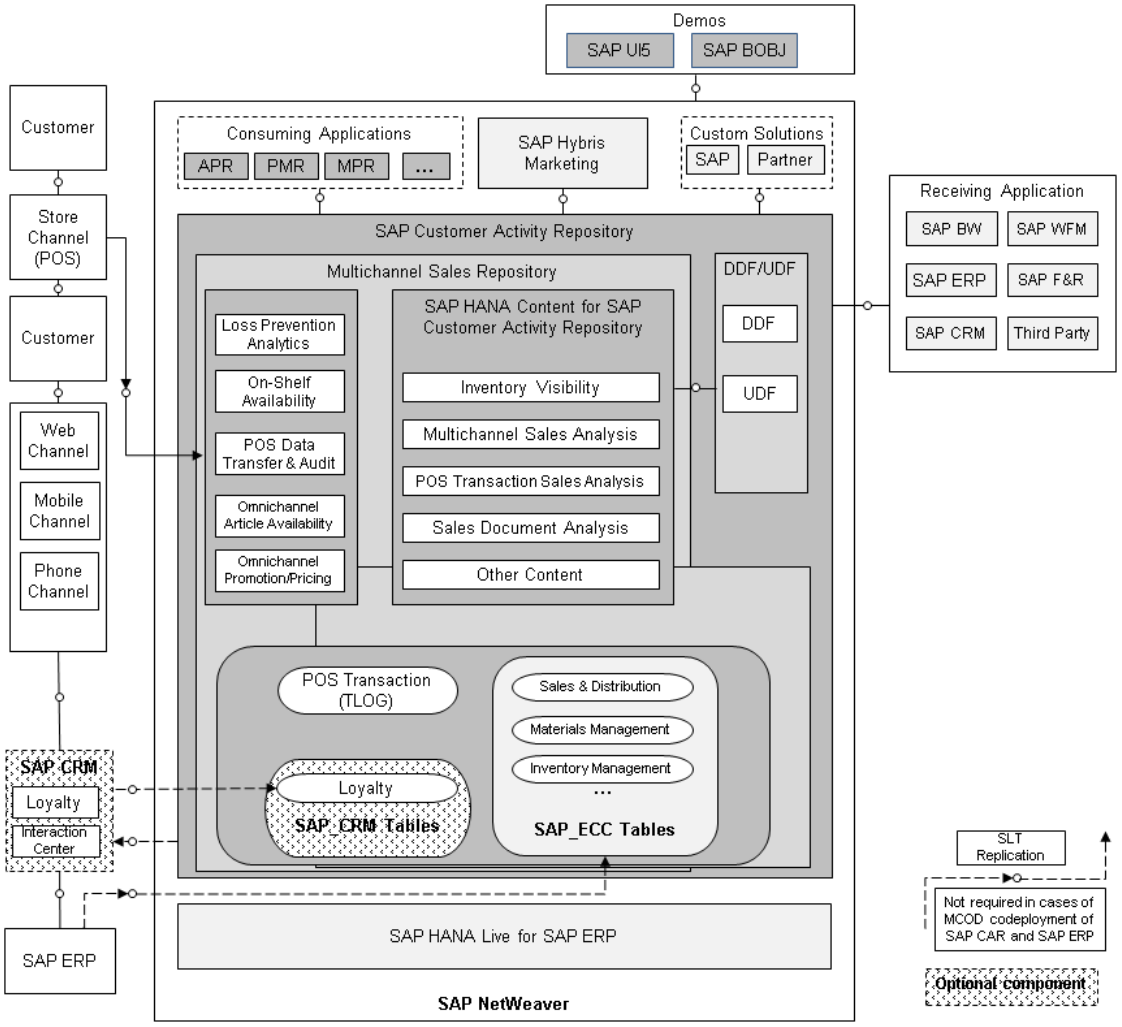


Figure 1: SAP Customer Activity Repository

Related Documentation

The following table lists where you can find more information about the technical system landscape.

Table 2:

Guide/Tool	Quick Link on the SAP Service Marketplace (service.sap.com)	Topics
Common Master Guide	http://service.sap.com/instguides ▶ *Industry Solutions* ▶ *Industry Solution Guides* ▶ *SAP for Retail* ▶ *SAP Customer Activity Repository* ▶ *SAP Customer Activity Repository <your release>* ▶ *Master Guide*	• Application- and industry-specific components such as SAP Financials and SAP Retail • Technology components such as SAP Web Application Server • Technical configuration • Scalability • High availability
Common Installation Guide	http://service.sap.com/instguides ▶ *Industry Solutions* ▶ *Industry Solution Guides* ▶ *SAP for Retail* ▶ *SAP Customer Activity Repository* ▶ *SAP Customer Activity Repository <your release>* ▶ *Installation Guide*	• Overall system planning • System landscape variants
Quick Sizer Tool	http://service.sap.com/sizing ▶ *Sizing Guidelines* ▶ *Industries* ▶ *SAP Customer Activity Repository, Retail Application Bundle*	Sizing
Security Guide	http://service.sap.com/security ▶ *SAP Security Guides* ▶ *Industry Solutions* ▶ *SAP for Retail* ▶ *SAP Customer Activity Repository* ▶ *Security Guide - SAP Customer Activity Repository <your release>*	Security

3 Monitoring of SAP Customer Activity Repository

3.1 Introduction

Within the management of SAP Technology, monitoring is an essential task. A section has therefore been devoted solely to this subject.

You can find more information about the underlying technology in the SAP NetWeaver Administrator's Guide - Technical Operations Manual in the *SAP Library* under *SAP NetWeaver Library*.

3.2 Alert Monitoring

Proactive, automated monitoring is the basis for ensuring reliable operations for your SAP system environment. SAP provides you with the infrastructure and recommendations needed to set up your alert monitoring to recognize critical situations for SAP Customer Activity Repository as quickly as possible.

Component-Specific Monitoring

> **Note**
>
> Component-specific monitoring via CCMS is not supported for software components `RTLCAR 200` and `RTLPOSDM 300`. Alternative monitoring possibilities are described below.

The Demand Data Foundation (DDF) and Unified Demand Forecast (UDF) modules provide the *SAP DMF* monitor set for *Computing Center Management System (CCMS)* monitoring.

The *SAP DMF* monitor set displays the monitoring hierarchy of the following UDF services (transaction **RZ20**):

Table 3: Services and Processes for CCMS Monitoring

Services	Monitoring Tree Elements (MTEs, nodes)
Model by hierarchy	`DMF_MODEL_PROCESSES_BY_HIER`
Model by product location	`DMF_MODEL_PROCESSES_BY_PROD_LOC`
Forecast by hierarchy	`DMF_FORECAST_PROCESSES_BY_HIER`

Services	Monitoring Tree Elements (MTEs, nodes)
Forecast by product location	DMF_FORECAST_PROCESSES_BY_PROD_LOC
Calculate hierarchical priors	DMF_CALCULATE_HIER_PRIORS

> **Note**
>
> A node may display the *MTE class: No MTEs currently available* message. This message indicates that the associated UDF service has not yet been run on this system to generate the *Monitoring Tree Elements* for this node.

Monitoring of SAP HANA

You can monitor SAP HANA through SAP HANA studio or SAP Solution Manager.

SAP HANA Studio

The System Monitor in SAP HANA studio provides an overview of SAP HANA systems with information such as the operational state, alerts generated, disk size for data, log and trace, memory used, percentage of CPU being used, and so on. For more detailed monitoring of resource usage and performance for a particular SAP HANA system, please use the Administrator Editor.

For information about the installation and general monitoring and administration of SAP HANA, and about the use of SAP Solution Manager with SAP HANA studio, see SAP Help Portal for SAP HANA Live at http://help.sap.com/hba ▶ *Installation, Security, Configuration, and Operations Information* ▶ *Administrator's Guide* ▶.

For more information about monitoring SAP HANA systems using SAP HANA studio, see SAP Help Portal for SAP HANA Platform at http://help.sap.com/hana_appliance ▶ *System Administration* ▶ *SAP HANA Administration Guide* ▶.

SAP Solution Manager

SAP Solution Manager can also be used for basic administration and monitoring of SAP HANA systems within SAP landscapes. SAP HANA integrates into existing operations with little effort if SAP Solution Manager is already in use. It is highly recommended to use SAP Solution Manager Release 7.1 SP05 or higher in order to get optimal support for SAP HANA. The monitoring and alerting infrastructure of SAP Solution Manager is based on central agent infrastructure. Pre-configured agents for SAP HANA are delivered by SAP. Once the agents are deployed on SAP HANA and connected to SAP Solution Manager, SAP Solution Manager will receive all alerts of the HANA studio. For larger and more complex landscape scenarios, SAP Landscape and Virtualization Manager (LVM) integrates with SAP HANA to allow basic operations like starting and stopping as well as management of dependencies.

For more information about connecting SAP Solution Manager to SAP HANA, see the *SAP HANA Technical Operations Manual* on SAP Help Portal for SAP HANA Appliance Software at http://help.sap.com/hana_appliance ▶ *System Administration* ▶ *SAP HANA Technical Operations Manual* ▶. See also SAP Service Marketplace at http://support.sap.com/solutionmanager.

For more information about SAP Solution Manager, see SAP Help Portal for Solution Manager at https://help.sap.com/solutionmanager.

Monitoring of SAP Customer Activity Repository

Monitoring for the POS Data Management component in SAP Customer Activity Repository consists of the following:

- POS DM Application Log
- POS DM Message Log
- Auditor Report
- Trace and Log files (accessed using transaction `SLG1` to log and trance ABAP components)

Monitoring of the SAP Landscape Transformation Replication Server

If you are replicating data from other source systems, monitoring of the SAP Landscape Transformation (LT) Replication Server is essential to ensure data consistency between the source system (for example, SAP ERP) and SAP Customer Activity Repository. The *Configuration and Monitoring Dashboard* (transaction `LTR` in the SLT server) provides users with information that can be used to monitor and identify potential replication issues. The overview screen provides the overall status of the configurations. For each configuration, detailed information is provided, which includes statuses of jobs and connections, statuses of database triggers for tables selected for replication, and statistical information about tables and settings.

As of release DMIS_2010 SP07 on the SAP LT Replication Server, you can use system monitoring capabilities of SAP Solution Manager 7.1 (SP05 or higher) to monitor the status of a configuration and its related schema.

For more information about monitoring load and replication process, see SAP Help Portal at http://help.sap.com/hana *SAP HANA Options* *SAP HANA Real-Time Replication* *SAP HANA Trigger-Based Data Replication Using SAP LT Replication Server* *System Administration and Maintenance Information* *Configuration Information and Replication Concepts* *Monitoring of Load and Replication Process*.

3.3 Detailed Monitoring and Tools for Problem and Performance Analysis

Use

The following functions are available within SAP Customer Activity Repository to monitor data flow within the application:

- `/POSDW/LOGS` - POS Data Management Application Log
- `/POSDW/DISPLAY_MESSAGELOG` - POS Data Management Message Log
- `/POSDW/DISPLAY_MODIFICATIONS` - Auditor Report

POS Data Management Application Log

The POS Data Management Application Log collects messages, exceptions, and errors, and displays them in a log. This log provides you with basic header information, a message long text, detailed information, and technical

information. For more information, see SAP Help Portal for SAP NetWeaver at http://help.sap.com/nw. Choose a release. Under *Application Help*, choose *Function-Oriented View* > *SAP NetWeaver Library: Function-Oriented View* > *Application Server* > *Application Server ABAP* > *Other Services* > *Services for Business Users* > *Application Log - User Guidelines (BC-SRV-BAL)*.

POS Data Management Message Log

The POS Data Management Message Log displays message logs by store and by posting date. You can filter the report by message-related criteria, such as message class or message priority.

Auditor Report

You use the Auditor Report to track manual changes made to POS transactions, as well as to get information about the origin of the transactions, such as the POS Workbench, an IDoc, or a remote function call module.

Trace and Log Files

Trace files and log files are essential for analyzing problems. Transaction `SLG1` is used to log and trace ABAP components. An Application Log consists of a log header and a set of messages. The log header contains general data, such as type, created by/on, and so on. Each log in the database also includes the attributes *Object* and *Subobject*. These attributes are used to describe and classify the application that has written the log.

Table 4: Important Log and Trace Files of POS Data Management (RTLPOSDM) Component

Object	Subobject	Description
/POSDW/PIPE	CHANGE_TASKSTATUS	Task status change
/POSDW/PIPE	CREATETREX	TREX index generation
/POSDW/PIPE	CREDITCARD_MIGRATION	Migration of encryption of credit card numbers
/POSDW/PIPE	DELETE	Delete program
/POSDW/PIPE	DELETE_AGGREGATE	Deletion program for POS aggregates
/POSDW/PIPE	IDOCDISPATCHER	IDoc dispatcher
/POSDW/PIPE	INBOUND_DISPATCHER	Initial processing using queue
/POSDW/PIPE	OUTBOUND_DISPATCHER	Outbound processing for POS aggregates
/POSDW/PIPE	PIPEDISPATCHER	POS dispatcher
/POSDW/PIPE	REFRESH_INDEX	Reconstruction of transaction index
/POSDW/PIPE	REORG_TIBQ	Reorganization of TIBQ
/POSDW/PIPE	STOREDAYCHANGE	POS Data Key change
/POSDW/PIPE	XML_IN	Import POS Transactions as XML file
/POSDW/PIPE	XML_OUT	Export POS Transactions as XML file

Table 5: Important Log and Trace Files of SAP Customer Activity Repository (RTLCAR) Component

Object	Subobject	Description
/POSDW/PIPE	OSADISPATCHER	Status of the execution of the On-Shelf Availability Parallel Processing of Alerts report.

For more information, see the SAP Help Portal for SAP NetWeaver at http://help.sap.com/nw. Choose a release. Under *Application Help*, choose *Function-Oriented View* > *SAP NetWeaver Library: Function-Oriented View* > *Application Server ABAP* > *Other Services* > *Services for Business Users* > *Application Log - User Guidelines (BC-SRV-BAL)*.

Archiving

Archiving of Data Used by SAP Customer Activity Repository

If you replicate data from other source systems to SAP Customer Activity Repository using SLT replication, the replicated data follows the data lifecycle of the source system. As such, when data is archived on the source system, it is deleted from the repository. Similarly, if you access data of other source systems directly from the repository (possible when the repository is co-deployed with the source system on the same SAP HANA database), you do not have access to archived data.

For example, if you archive sales documents in SAP ERP (for example, for performance reasons), these sales documents will no longer be available in SAP Customer Activity Repository. This could affect your reports if you choose to have a short lifecycle of sales documents in SAP ERP. For example, if you archive sales documents after nine months, a year-to-date multichannel sales analysis report in December would miss the sales documents data for most of the first quarter.

For more information on deployment options for SAP Customer Activity Repository, see http://help.sap.com/car > *<your release>* > *Installation and Upgrade Information* > *Installation Guide*.

Data Growth and Data Archiving Monitors

The following are the fastest growing tables in SAP Customer Activity Repository:

Table 6:

Technical Name of Table	Description
/POSDW/TLOGF	Transaction Log Flat table
/POSDW/TLOGF_EXT	Transaction Log Extensions table
/POSDW/TLOGF_X	Transaction Log Optimized Extensions table
/POSDW/TIBQ	Inbound Queue for POS Transactions
/POSDW/TIBQ_ADM	Management Records of Inbound Queue for POS Transactions
/POSDW/SOBJL	Source Object Link for POS Transactions
/POSDW/PLOG1S	Processing Log for Small Logs

Technical Name of Table	Description
/POSDW/TSTAT	Areas of Task Status
/POSDW/NAVIX	Navigation Index for Store and Day
/POSDW/AGGR	POS Aggregate

You can use the SAP HANA Studio to identify which tables use the most disk space. To verify the amount of disk space used by a table, do the following:

1. Log on to SAP HANA Studio.
2. Locate the name of your system in the *Navigator* pane.
3. Right-click on your system name and select *Administration* from the context menu.
4. Select the *System Information* tab.
5. Select the *Size of tables on disk* entry.
   The tables are displayed with their corresponding disk usage values.

SAP Customer Activity Repository uses the standard archiving and monitoring data archiving tools available in SAP NetWeaver. It does not require any application-specific tools. There are two relevant archiving objects: /POSDW/AGG and /POSDW/TLF.

The following SAP Notes relate to data growth and archiving in SAP Customer Activity Repository:

- 813537 (General notes about archiving POS data)
- 625081 (Archiving objects and namespace)

For more information about the standard archiving tools, see the SAP Help Portal for SAP NetWeaver at http://help.sap.com/. Choose a release. Under *Application Help*, choose *Function-Oriented View* > *SAP NetWeaver Library: Function-Oriented View* > *Solution Lifecycle Management* > *Data Archiving* > *Data Archiving in the ABAP Application System* > *Data Archiving with Archive Development Kit (ADK)* > *Archive Administration*.

Data Load After a Reboot

When you reboot an SAP NetWeaver powered by SAP HANA system, all data that was stored in-memory is lost, and must be reloaded from the permanent persistency layer of the SAP HANA database. After the reboot, the first time you run the SAP Customer Activity Repository application, you may experience significant delays as the application reloads tables such as /POSDW/TLOGF or /POSDW/NAVIX for the first time.

To avoid these delays, it is recommended that you reload all POS Data Management tables with high disk space usage in the following instances:

- Immediately following the reboot of your SAP NetWeaver powered by SAP HANA system
- Prior to launching the SAP Customer Activity Repository application.

First, you must identify which tables use the most memory. See the *Data Growth and Data Archiving Monitors* section above.

Then, for each table, run the following SQL command to load the table from the permanent persistency layer into main memory:

```
load <SAP_SCHEMA>."<TABLE_NAME>" all
```

where <SAP_SCHEMA> is the name of your SAP HANA database schema and <TABLE_NAME> is the name of the table to load. You can verify the database schema of a particular table in SAP HANA Studio using the same process you use to verify table disk space usage.

You can also create an SQL script that will be automatically executed following an SAP NetWeaver powered by SAP HANA system reboot. You can use the SAP HANA Studio SQL Editor to create this script, or, you can create an ABAP report which will include the following commands:

```
EXEC SQL.
load <SAP_SCHEMA>."<TABLE_NAME1>" all.
load <SAP_SCHEMA>."<TABLE_NAME2>" all.
load <SAP_SCHEMA>."<TABLE_NAME3>" all.
…
ENDEXEC.
```

More Information

For detailed monitoring information about the underlying components of SAP Customer Activity Repository, see the following:

Table 7:

Reference	Path	Important Sections or Topics (If Applicable)
Technical Operations for SAP NetWeaver	See SAP Help Portal for SAP NetWeaver at http://help.sap.com/nw ▶ *<your release>* ▶ *System Administration and Maintenance Information* ▶ *Technical Operations for SAP NetWeaver* ▶ *Administration of Application Server ABAP* ▶ *Monitoring and Administration Tools for Application Server ABAP* ▶.	• Statistics, Displaying and Controlling Work Processes (SM50) • System Log (SM21) • ABAP Dump Analysis
SLT System Administration and Maintenance Information	See SAP Help Portal for SAP HANA at http://help.sap.com/hana ▶ *SAP HANA Options* ▶ *SAP HANA Real-Time Replication* ▶ *SAP HANA Trigger-Based Data Replication Using SAP LT Replication Server* ▶ *System Administration and Maintenance Information* ▶.	Changing Load and Replication Procedures

Reference	Path	Important Sections or Topics (If Applicable)
SAP HANA Administration Guide	See SAP Help Portal for SAP HANA Appliance Software at http://help.sap.com/hana_appliance ▶ *System Administration* ▶ *SAP HANA Administration Guide* ▶.	Monitoring SAP HANA Systems

3.4 Detailed Monitoring and Analysis Tools Specific to On-Shelf Availability

The following function is available to monitor the OSA-specific data flow within the application:

- `/POSDW/LOGS`: SAP POS DM Application Log
  The SAP POS DM Application Log collects messages, exceptions and errors, and displays them in a log. This log provides you with basic header information, a message long text, detailed information, and technical information.
  For more information, see the SAP Library Help at http://help.sap.com/nw74/ ▶ *Application Help* ▶ *Function-Oriented View* ▶ *Application Server* ▶ *Application Server ABAP* ▶ *Other Services* ▶ *Services for Business Users* ▶ *Application Log - User Guidelines (BC-SRV-BAL)* ▶.

Trace and Log Files

Trace files and log files are essential for analyzing problems. The `SLG1` transaction is used to log and trace ABAP components. An application log consists of a log header and a set of messages. The log header contains general data, such as type or created by/on data. Each log in the database also includes the attributes Object and Sub-Object. These attributes are used to describe and classify the application that wrote the log.

Table 8:

Object	Sub-Object	Description
/POSDW/PIPE	OSADISPATCHER	Status of the execution of the On-Shelf Availability Parallel Processing of Alerts report.

For more information, see the SAP Library Help at http://help.sap.com/nw74/ ▶ *Application Help* ▶ *Function-Oriented View* ▶ *Application Server* ▶ *Application Server ABAP* ▶ *Other Services* ▶ *Services for Business Users* ▶ *Application Log - User Guidelines (BC-SRV-BAL)* ▶.

Cleanup of growing data

OSA computation data is historized, that is stored with the execution date and time and used in the analysis step of On-Shelf Availability processing. Because of growing data amounts, SAP recommends to perform a clean-up in regular intervals. The transaction `/OSA/CLEANUP` deletes OSA computation data from the SAP HANA Database.

In the `/OSA/CLEANUP` transaction, you can specify the following parameters:

- The range of stores for which you want to perform the cleanup
- The date range for which you want to perform the cleanup
- Test mode:
  - If test mode is activated, selected data will be only listed but not deleted
  - If test mode is deactivated, selected data will be deleted
- Detail level of the messages that will be logged during the cleanup

`/OSA/CLEANUP` deletes OSA computation data together with run information from the following OSA tables:

- `/osa/mon_ana`
- `/osa/mon_ana_sum`
- `/osa/ana_conf`
- `/osa/estimat`
- `/osa/est_conf`
- `/osa/iw_pattern`
- `/osa/iwp_conf`
- `/osa/monitoring`
- `/osa/mon_sum`
- `/osa/mon_conf`

The user who executes cleanup needs read and write privileges for the tables that are deleted during cleanup.

Data Growth and Archiving the Monitor Results

The `/OSA/STATUSLOG` table is the fastest growing OSA table.

Use the `SARA` transaction to archive the `/OSA/STATUSLOG` table in regular intervals.

The On-Shelf Availability functionality uses the standard archiving and monitoring data archiving tools available in SAP NetWeaver. It does not require any application-specific tools. The relevant archiving object is `/OSA/STATU`.

For more information regarding the standard archiving tools, see the SAP Library Help at *http://help.sap.com/nw74/* > *Application Help* > *Function-Oriented View* > *Solution Lifecycle Management* > *Data Archiving* > *Data Archiving in the ABAP Application System* > *Data Archiving with Archive Development Kit (ADK)* > *Archive Administration*.

3.5 Data Consistency

SLT Replication

Data can be optionally replicated from SAP ERP and from SAP CRM to SAP Customer Activity Repository. If you replicate data, the information in the replicated tables must be consistent between the source and the target systems.

> **Caution**
>
> You can monitor the processes of the SAP Landscape Transformation (SLT) Replication server using the *Configuration and Monitoring Dashboard*, as specified in the Alert Monitoring [page 8] section. However, the dashboard does not currently provide an automated way to monitor the consistency of replicated tables. When performing SLT replication, you must verify that all the tables required for your SAP Customer Activity Repository implementation, as well as their contents, are being replicated.

More general information about deployment options and data replication into SAP Customer Activity Repository is described under http://help.sap.com/car ▶ *<your release>* ▶ *Installation and Upgrade Information* ▶ *Installation Guide* ▶.

Master Data Checking

The system automatically executes the master data checks that you created in the Customizing for POS Inbound Processing.

The master data checks are processed in the following situations:

- During the inbound processing of POS transactions
- When the editor is started for a particular POS transaction within the POS Workbench
- When tasks are processed

The system checks for POS transaction data and automatically enhances it with further data. If there is no valid master data in the system, the master data check fails and a corresponding error message is displayed. There is no further processing of the affected POS transaction within the task processing.

If all checks and data enhancements are successful, the system continues executing the functions, without interruption, according to the guidelines prescribed by which checks were already performed.

You can also check transaction data when executing processing tasks using rules that you have created in Customizing (transaction **SPRO**) under ▶ *POS Inbound Processing* ▶ *Tasks* ▶ *Define Rules* ▶. Once you have created a rule, you can execute a specific activity depending on the result you receive. You create rules when you want to process tasks only if certain conditions are met.

ABAP Shared Memory Objects

The POS Data Management component of SAP Customer Activity Repository includes functionality to verify master data in the transactions received from the point-of-sale.

Retrieving master data from database tables through SAP HANA views to perform master data checks for Material, Unit of Measure, and International Article Number (EAN) can result in slower system performance, especially in situations when the number of master data records is high. To improve system performance, the implementation of the master data retrieval uses ABAP shared memory objects to buffer the contents of the master data tables in a shared memory area of the SAP NetWeaver application server. After the initial load of the shared memory objects, instead of going to the database to retrieve the required data, the data is retrieved from the shared memory objects, thereby providing faster data retrieval.

Each version of a shared memory object becomes obsolete 60 minutes after a change lock is released, and the application server performs an automatic refresh from the database.

Shared Objects Area Management (transaction `SHMA`) is used to display areas for shared objects and their properties.

Shared Objects Monitor (transaction `SHMM`) provides an overview of the area instances in the shared objects memory of the current application server, and offers selected functions for it.

The following area instances in the shared object memory are relevant for SAP Customer Activity Repository:

Table 9:

Shared Memory Object Area	Description
• `/POSDW/CL_MATERIAL_BUFFER_AREA` • `/POSDW/CL_MARM_BUFFER_AREA` • `/POSDW/CL_MEAN_BUFFER_AREA`	The POS Data Management component of SAP Customer Activity Repository includes functionality to verify master data in the transactions received from the point-of-sale. Master data checks for Material, Unit of Measure, and International Article Number (EAN) retrieve master data from database tables through SAP HANA views. The listed shared memory object allow faster access to this data.
• `/POSDW/CL_POSCTRL_BUFFER_AREA`	Implementation `/POSDW/ANALYTIC_DIST_ENH_IMP` of *BAdI: POS Transaction Data Distribution to Item Level* distributes discount amounts from the transaction header to the transaction line items. This BAdI implementation uses the listed shared memory object to speed up access to SAP HANA view `sap.is.retail.ecc.ARTICLEPOSCTRL`, which contains information on whether an article is discountable or not.

Additional general information about ABAP shared memory objects can be found in the SAP NetWeaver application help at <_sfe:ExternalLink xmlns:_sfe="http://www.arbortext.com/namespace/Styler/StylerFormattingElements" href="http://help.sap.com/saphelp_nw70/helpdata/en/df/109b8b4b073b4c82da0f2296c3a974/frameset.htm">http://help.sap.com/saphelp_nw70/helpdata/en/df/109b8b4b073b4c82da0f2296c3a974/frameset.htm</_sfe:ExternalLink>

Shared Memory Object Size

Every retail business is different, and as such, the amount of master data, such as the number of articles, or unit of measure definitions, is also different. The amount of memory required to buffer this master data at the application server level varies from business to business.

To set the size of shared memory, do the following:

1. Execute transaction `RZ11` in your SAP Customer Activity Repository system.
2. Enter **`abap/shared_objects_size_MB`** as the parameter name and choose *Display*.
3. In the *Maintain Profile Parameters* screen, choose *Change Value* or *Edit* > *Change Value* (depending on your SAP NetWeaver version).
4. Enter the appropriate shared memory size, in MB, in the *Current Value* field.
   We recommend setting the shared memory size to at least 300 MB. Out of this 300 MB, 10-20% is reserved for the internal administration of shared memory.
   For more information on troubleshooting shared memory sizing issues, see the following subsection as well as SAP Note 1322182.
5. Restart the application server.
   Changes to shared memory size only take affect once the application server is restarted.

Troubleshooting Shared Memory Object Issues

Runtime errors that are related to the use of shared memory objects that can occur are as follows:

- **Shared Memory Object Sizing Issues**
  Typically, a runtime error caused by a `CX_SHM_OUT_OF_MEMORY` exception, indicates that an insufficient amount of memory is allocated to shared memory.
  If your SAP Customer Activity Repository application is terminated as a result of a `CX_SHM_OUT_OF_MEMORY` exception, verify the *Runtime Error Long Text* provided with the runtime error (this can also be accessed using transaction `ST22`). The long text provides the size of the objects that the application was attempting to load into one of the `/POSDW/CL_*_BUFFER_AREA` shared memory objects. You should increase the size of shared memory, as described in the previous subsection, by at least this amount, plus an additional 10-20% buffer required for administrative activities.
  For example, `abap/shared_objects_size_MB` is currently set to 300 MB. Your SAP Customer Activity Repository application produces a runtime error, indicating that 500 MB of fails to load into the `/POSDW/CL_MATERIAL_BUFFER_AREA`. You should increase the size of `abap/shared_objects_size_MB` from 300 MB to 850-900 MB and restart the system.
- **Shared Memory Area Initialization Delays**
  When SAP Customer Activity Repository performs master data checks to verify material, unit of measure, and International Article Number (EAN) data, the system verifies the data included in the received POS transactions against the data buffered in the shared memory objects (`/POSDW/CL_MATERIAL_BUFFER_AREA`, `/POSDW/CL_MARM_BUFFER_AREA`, `/POSDW/CL_MEAN_BUFFER_AREA`). If the master data check occurs prior to the initialization of the shared memory area, this can result in a runtime error caused by a `CX_SHM_NO_ACTIVE_VERSION` exception.
  The time required to initialize the shared memory area (that is, the time required to load master data from the database tables into the dedicated shared memory objects) is controlled by the `SHM_MAXIMUM_PRELOAD_WAIT_TIME` component of the `SETTINGS` parameter used by the `CALL` method of BAdI `/POSDW/SETTINGS`. By default, `SHM_MAXIMUM_PRELOAD_WAIT_TIME` is set to 10 seconds. If you are experiencing runtime errors caused by a `CX_SHM_NO_ACTIVE_VERSION` exception, you may need to increase the value of `SHM_MAXIMUM_PRELOAD_WAIT_TIME` to allow for a longer period to initialize the shared memory area.
  For more information, see SAP Note 1965920.

Staging Tables

External data providers write data into the staging tables. During a Remote Function Call (RFC), the data providers can additionally provide a high resolution time stamp.

Every data record in the staging tables has a high resolution time stamp (field `EXT_KEY_TST`). The time stamp is part of the data record key. As a result, different records for the same object can exist in the table at any given point in time. When processing the data from the staging tables, the newest data record of each object is used.

Authorization Checks

The system performs authorization checks on the following function groups:

- `/DMF/BI_SALES_INBOUND` (*Inbound RFC for BI Sales Data*)
- `/DMF/MDIF_IMAGE_DATA` (*DMF Inbound RFC Image Data*)
- `/DMF/MDIF_LANE` (*DMF Inbound RFC Lane Data*)
- `/DMF/MDIF_LOCATION` (*DMF Inbound RFC Location*)
- `/DMF/MDIF_LOC_HIER` (*DMF Inbound RFC Location Hierarchy*)
- `/DMF/MDIF_PRODUCT` (*DMF Inbound RFC Product*)
- `/DMF/MDIF_PROD_HIER` (*DMF Inbound RFC Product Hierarchy*)
- `/DMF/MDIF_PROD_LOC` (*DMF Inbound RFC Product Location*)
- `/DMF/OPIF_INVENTORY` (*Inbound Staging Modules for Inventory*)
- `/DMF/TS_GENERIC_INBOUND` (*Inbound RFC for Generic Time Series*)
- `/DMF/DISTRIBUTION_CURVE` *(Distribution Curve Function Group)*

Data Validation for Modeling and Forecasting

You can run a data validation report prior to performing demand modeling and forecasting. This allows you to identify potential issues in your input data early on and rectify them as needed. For more information about this report, see SAP Note 2161484.

3.6 Detailed Monitoring and Analysis Tools Specific to Demand Data Foundation

3.6.1 Preparing Exception Handling

The Demand Data Foundation (DDF) module in SAP Customer Activity Repository uses the exception handling framework to log errors that have occurred during background processes.

The exception definition is based on the general ABAP message concept. Each exception is identified by the combination of a message class and a message number. Each instance of an exception has a unique internal ID (message handle).

For more information about the exception handling framework, see SAP Help Portal at http://help.sap.com/car ▶ *<your release>* ▶ *Application Help* ▶ *Demand Data Foundation* ▶ *General Services* ▶ *Exception Management* ▶.

> **Note**
>
> There are subobjects that do not use the exception handling framework. For a list of those objects and more information on how you can monitor them, see Analyze Application Log [page 23].

3.6.2 Configuring Exceptions

Before actual exception instances can be created, you must first configure the exceptions in Customizing (transaction **SPRO**). To do this, you use the activities under ▶ *Cross-Application Components* ▶ *Demand Data Foundation* ▶ *Basic Settings* ▶ *Exception Management* ▶.

For more information, see the following:

- System documentation of each activity
- Section *Customizing* under http://help.sap.com/car ▶ *<your release>* ▶ *Application Help* ▶ *Demand Data Foundation* ▶ *General Services* ▶ *Exception Management* ▶

High Level Exceptions

You can configure high level exceptions under ▶ *Cross-Application Components* ▶ *Demand Data Foundation* ▶ *Basic Settings* ▶ *Exception Management* ▶ *Maintain Configuration Data for High Level Exceptions* ▶.

You can do the following:

- Assign business areas to exceptions (such as *Forecasting*)
- Assign priorities to exceptions (such as *Medium Priority*)
- Define message types (such as *Error*, *Warning*, *Information*)
- Define validity periods after which the exceptions can be purged from the database

Low Level Exceptions

Additionally, you can assign a priority to each low level exception under ▶ *Cross-Application Components* ▶ *Demand Data Foundation* ▶ *Basic Settings* ▶ *Exception Management* ▶ *Maintain Configuration Data for Low Level Exceptions* ▶.

Customer-Specific Replacement Messages

You can define your own message texts under *Cross-Application Components* > *Demand Data Foundation* > *Basic Settings* > *Exception Management* > *Define Customer-Specific Replacement Messages*.

Customizable Message Statuses

In addition to the defaults provided (*New*, *Processed*, *Ignore*), you can define your own message statuses under *Cross-Application Components* > *Demand Data Foundation* > *Basic Settings* > *Exception Management* > *Define Customizable Message Status*.

3.6.3 Monitoring Exceptions

Use

Exceptions are system-based messages that inform users about situations requiring special attention or action. You can use the *Monitor Exceptions* service to review and process the exceptions.

You can do the following:

- Get an overview of the number of exceptions
- Filter the exceptions based on a number of different criteria
- Perform additional filtering based on the business area, context type, or context instance (value)
- Display the selected exceptions in a table
- Display the detailed information on the exception
- Display all low level exceptions assigned to a selected high level exception

More Information

- To access this service from your SAP Easy Access screen, execute transaction **nwbc** and choose *Services* > *Monitor Exceptions*.
- For more information about how to use this service, see SAP Help Portal at http://help.sap.com/car > *<your release>* > *Application Help* > *SAP Customer Activity Repository* > *Demand Data Foundation* > *General Services* > *Exception Management* > *Monitor Exceptions*.

3.6.4 Purging Obsolete Exceptions

Depending on your scenario, you might have large numbers of exceptions occurring during system operation. We recommend that you regularly purge (delete) the obsolete exceptions from the database. To do this, you can use the *Purging Exceptions from the Database* report (`/DMF/PURGE_EWB_MESSAGES`). For more information, see SAP Help Portal at http://help.sap.com/car ▶ *<your release>* ▶ *Application Help* ▶ *Demand Data Foundation* ▶ *General Services* ▶ *Exception Management* ▶ *Monitor Exceptions* ▶.

3.6.5 Analyzing Application Logs

You can use application logs to record application-specific events. The logs record the execution progress of the application so that you can reconstruct it later if necessary.

The *Analyze Application Log* function allows you to filter the collected information (such as messages, exceptions, and errors) for the information that you need. The following information is available:

- Basic header information on the events that have occurred
- Event details
- Technical information
- Message short and long texts

Procedure

You use the *Analyze Application Log* function as follows:

1. Call up the function via transaction **SLG1**.
2. In the *Object* field, specify the object whose application log you want to view. For example, specify **/DMF/APPL** for the Demand Data Foundation (DDF) module in SAP Customer Activity Repository.
3. In the *Subobject* field, limit your search to specific DDF subobjects if desired:
   - `/DMF/AFNTY`
   - `/DMF/ATR`
   - `/DMF/ENGINE`
   - `/DMF/MERCH_PLAN`
   - `/DMF/OFFER`
   - `/DMF/OFFER_PURGE`
   - `/DMF/PHP`
4. Specify additional criteria as needed and execute the function.

> **Note**
>
> You can define entries for your own applications in the application log via transaction **SLG0**. Use this transaction with care, as the associated table is cross-client.

3.6.6 Workload Monitoring

Use

Using the Workload Monitor

You can use the workload monitor (transaction **ST03**) to analyze statistical data for the ABAP kernel. If you are analyzing the performance of a system, you should normally start with the workload overview. You can also display the total values for all instances, and compare the performance of particular instances over a period of time. A wide range of analysis views and data helps you to find the source of performance problems quickly and easily.

Managing Inbound Processing for Demand Data Foundation

Inbound processing comprises the import of master data and transactional data into the Demand Data Foundation (DDF) module in SAP Customer Activity Repository. By default, inbound processing takes place as follows:

1. You send the data from the external system to DDF using a Remote Function Call (RFC) or enterprise services, for example. You can do either an initial load and or a delta load, which transfers only the changed object instances.
2. The import data is stored in the staging tables in DDF. No business validations are performed at this point.

   > **Note**
   >
   > You can choose to skip this step and bypass the staging tables. The imported data is then saved directly in the production tables. For more information, see Customizing (transaction **SPRO**) under *Cross-Application Components* > *Demand Data Foundation* > *Basic Settings* > *Integration* > *Define Import Settings*. Here you can define for each type of master data and transactional data whether you want to bypass the staging tables or not (default setting).

3. The data is transferred from the staging tables to the production tables. Business validations are performed. Once the data is available in the production tables, it can be used for follow-on processes (such as demand modeling and forecasting with the Unified Demand Forecast module).

Available Services

Different services help you manage the inbound processing:

- *Monitor Imports*
  See http://help.sap.com/car *<your release>* > *Application Help* > *SAP Customer Activity Repository* > *Demand Data Foundation* > *General Services* > *Monitor Imports*.
- *Process Inbound Staging Tables*
  See the `/DMF/PROCESS_STAGING_TABLES` report and http://help.sap.com/car *<your release>* > *Application Help* > *SAP Customer Activity Repository* > *Demand Data Foundation* > *General Services* > *Monitor Imports* > *Process Inbound Staging Tables*.

Additional Options

You can use the following options to adapt the inbound processing to your needs:

- If the processing of transportation lane, product location, or sales data from the staging tables to the production tables takes more time than expected, you can use the `/DMF/SET_STAGING_CONFIG_TABLE`

report to activate an alternative packaging. For more information, see the report documentation (transaction **SE38**) and SAP Note 2019909.

- You can schedule the *Process Inbound Staging Tables* service as a batch job to move the data from the staging tables.
- You can move the data manually from the staging tables. The *Monitor Imports* > *Manual Processing* option is available for this.

More Information

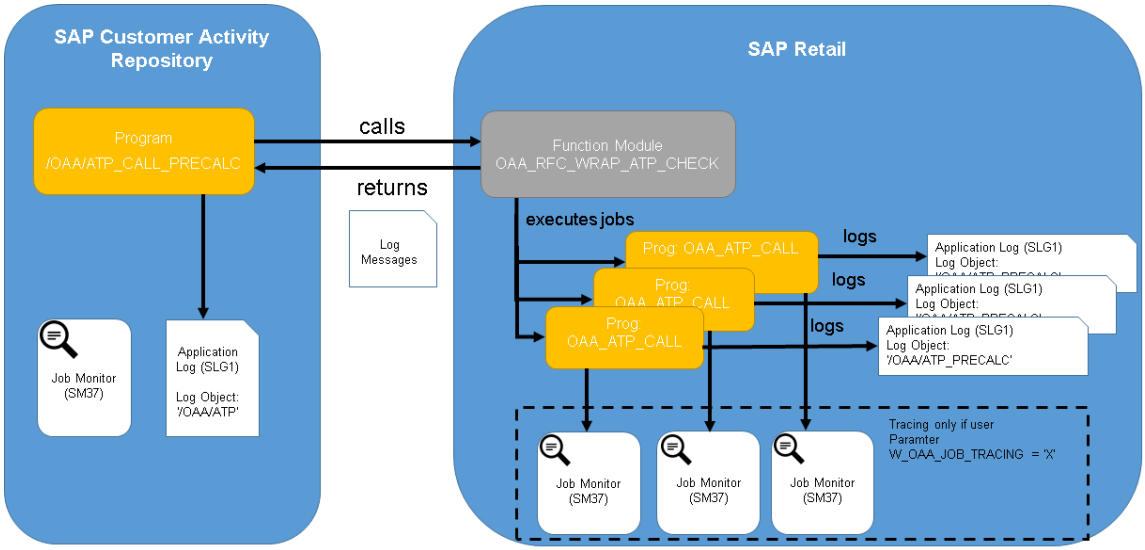
http://help.sap.com/car > *<your release>* > *Application Help* > *SAP Customer Activity Repository* > *Demand Data Foundation* > *Integration Information* and *Inbound Processing*

3.7 Detailed Monitoring and Analysis Tools Specific to Omnichannel Article Availability

SAP Customer Activity Repository and SAP Retail

- The parallelized ATP run (report `/OAA/ATP_CALL_PRECALC`) that is triggered in SAP Customer Activity Repository and executed in SAP Retail follows standard ABAP job monitoring (transaction **SM37**) and uses the standard application log (transaction **SLG1**)
  - Application log object in SAP Customer Activity Repository: `/OAA/ATP`, no subobjects
  - Application log object in SAP Retail: `/OAA/ATP_PRECALC`, no subobjects

  To activate the traceability of the parallelized ATP run, you need to activate user parameter `W_OAA_JOB_TRACING` (transaction **SU3**) in SAP Retail for the technical user entered in the RFC destination in SAP Customer Activity Repository for the SAP Retail destination. This allows you to trace the result of the parallelized ATP run during the implementation phase in the job monitor log of SAP Retail (transaction **SM37**). In the productive system, activate this user parameter in case of errors only, to improve performance.



- With all reports in SAP Customer Activity Repository and SAP Retail, errors are logged with the reports.
- There is no application monitoring.
- With REST services in SAP Customer Activity Repository , there is no logging; errors are returned to the caller (that is, the online store software application). There is no application monitoring for the REST services.

SAP Hybris Commerce

OAA functionality in SAP Hybris Commerce uses standard monitoring and logging for both applications and Data Hub. The logger package is `com.sap.retail.oaa.commerce.services`.

3.8 Detailed Monitoring and Analysis Tools Specific to Omnichannel Promotion Pricing

Monitoring Log Information of Transformations

In transaction **SLG1**, you can display the log and trace information that is created during the manual transformation of an offer into an OPP promotion after the offer has been approved. Use the following settings for object and sub-object:

Table 10:

Object	Sub-Object	Description
/ROP/APPL	/ROP/BO	Omnichannel Promotion Pricing Application

For more information, see the Application Help for SAP NetWeaver 7.4. In the Application Help, choose *Function-Oriented View* > *Application Server* > *Application Server ABAP* > *Other Services* > *Services for Business Users* > *Application Log- User Guidelines (BV-SRV-BAL)*.

Monitoring Outbound of Prices and OPP Promotions

The outbound of regular prices and OPP promotions can be monitored with the following two transactions:

Table 11:

Transaction Code	Transaction Title	Description
DRFLOG	Analyze Log for Outbound Implementations	Use this transaction to analyze the Data Replication Framework (DRF) outbound process. You can choose the following filter criteria: • The replication model that you have created for the replication of regular prices and OPP promotions. For more information, see the Application Help for SAP Customer Activity Repository. In the Application Help, and choose *Omnichannel Promotion Pricing* > *Replicating Regular Prices and OPP Promotions*. • `CROP_PRICE` as the outbound implementation to monitor the outbound of regular prices. `ROP_PROMO` as the outbound implementation to monitor the outbound of OPP promotions.
WE05	IDoc List	Use this transaction, if the content of the sent IDocs is of primary interest. You can choose the filter settings according to your Application Link Enabling (ALE) Customizing. For more information, see the Application Help for SAP Customer Activity Repository, and choose *Omnichannel Promotion Pricing* > *Replicating Regular Prices and OPP Promotions* > *Application Link Enabling*

4 Management of SAP Customer Activity Repository

4.1 Introduction

SAP provides you with an infrastructure to help your technical support consultants and system administrators effectively manage all SAP components and complete all tasks related to technical administration and operation.

You can find more information about the underlying technology in the Technical Operations Manual in the *SAP Library* under *SAP NetWeaver*.

4.2 Starting and Stopping

Start and Stop Sequences and Tools

Table 12:

Software Component	Sequence	Tool	Detailed Description
SAP HANA Database	1	sapstartsrv	See the information about starting and stopping SAP HANA systems in the *SAP HANA Administration Guide*.
RTLCAR	2	STARTSAP	Log on to the host of your central system as the SAP Administrator. Enter **`startsap ALL`** to start the SAP NetWeaver database, ABAP instances, and all other processes.

Software Component	Sequence	Tool	Detailed Description
SAP LT Replication Server (Optional)	3	SAP HANA Studio	Use SAP HANA Studio to start replication of tables required by SAP Customer Activity Repository. See http://help.sap.com/car ▶ *<your release>* ▶ *Installation and Upgrade Information* ▶ *Installation Guide* ▶ for information on deployment options, which determine whether replication is necessary. If replication is required, this guide also provides information on how to set up table replication and which tables need to be replicated. For more information, see SAP Help Portal at http://help.sap.com/hana ▶ *SAP HANA Options* ▶ *SAP HANA Real-Time Replication* ▶ *SAP HANA Trigger-Based Data Replication Using SAP LT Replication Server* ▶ *System Administration and Maintenance Information* ▶
SAP LT Replication Service (Optional)	4	SAP HANA Studio	Use SAP HANA Studio to stop replication of tables required by SAP Customer Activity Repository. For more information, see SAP Help Portal at http://help.sap.com/hana ▶ *SAP HANA Options* ▶ *SAP HANA Real-Time Replication* ▶ *SAP HANA Trigger-Based Data Replication Using SAP LT Replication Server* ▶ *System Administration and Maintenance Information* ▶

Software Component	Sequence	Tool	Detailed Description
RTLCAR	5	STOPSAP	Log onto the host of your central system as the SAP Administrator. Enter **`stopsap R3`**. Note that the `R3` switch does not stop the database simultaneously. To do so, use the command **`stopsap`** or **`stopsap ALL`**.
SAP HANA Database	6	sapstartsrv	See the information about starting and stopping SAP HANA systems in the *SAP HANA Administration Guide*.

4.3 Software Configuration

This chapter explains which components or scenarios used by this application are configurable and which tools are available for adjusting.

Table 13:

Software Component	Configuration Tool(s)	Detailed Description
RTLCAR	SAP Customizing	See the documentation in Customizing for SAP Customer Activity Repository.
RTLPOSDM	SAP Customizing	See the documentation in Customizing for SAP Customer Activity Repository under *POS Data Management*.
RTLMCFND	SAP Customizing	See the documentation in Customizing for SAP Customer Activity Repository under *Retail Multichannel Foundation*.
RTLDDF	SAP Customizing	See the documentation in Customizing for SAP Customer Activity Repository under *Demand Data Foundation*.

4.4 Administration Tools

SAP Customer Activity Repository uses the standard SAP NetWeaver administration tools. For more information, see SAP Help Portal for SAP NetWeaver at http://help.sap.com/nw ▶ *<your release>* ▶ *System Administration and Maintenance Information* ▶ *Technical Operations for SAP NetWeaver* ▶ *Administration of SAP NetWeaver systems and components* ▶.

SAP Customer Activity Repository also uses the administration tools available with SAP HANA. For more information, see SAP Help Portal for SAP HANA Appliance software at http://help.sap.com/hana_appliance ▶ *System Administration* ▶ *SAP HANA Technical Operations Manual* ▶.

Periodic Scheduled Tasks

You can automate scheduled tasks using a task scheduler program.

Data Import

- To import master data and transactional data into the Demand Data Foundation (DDF) module, you can schedule automated import tasks using the `/DMF/PROCESS_STAGING_TABLES` report (transaction **SE38**).
  For more information, see http://help.sap.com/car ▶ *<your release>* ▶ *Application Help* ▶ *SAP Customer Activity Repository* ▶ *Demand Data Foundation* ▶ *General Services* ▶ *Monitor Imports* ▶ *Process Inbound Staging Tables* ▶.
- Make sure that the master data is continuously imported into DDF.
  If you use an SAP ERP application as your master data system, configure the DRF data replication framework (transaction **DRFOUT**) to periodically send the data. For more information, see ▶ *SAP Solution Manager* ▶ *Business Scenario: Customer Activity Repository* ▶ *Business Process: Enabling Demand Data Foundation and Creating Demand Forecast* ▶ and consult the information on the *Documentation* and *Configuration* tabs.

Data Export

- To periodically export regular prices and OPP promotions (outbound) as part of the Omnichannel Promotion Pricing, you can schedule automated exports using transaction **DRFOUT**.

Periodic Manual Tasks

A manual task needs a person to execute it. Manual tasks may be required for individual components and are therefore relevant in each scenario that uses the component. Other manual tasks may be relevant for certain business scenarios only. It is important that you monitor the successful execution of these tasks on a regular basis.

For an overview of manual tasks for managing DDF, see the following table.

> ➔ Recommendation
>
> You can use transaction **SE38** to run programs/reports and display the accompanying documentation.

Table 14: Manual Tasks for Managing DDF

Task	Tool Supporting the Task	Recommended Frequency	Description
Purge master data	Report `/DMF/PURGE_AGENT`	As required	You can use this report to purge master data. For more information, see the report documentation.
Delete obsolete time series data	Report `/DMF/TS_DELETE`	As required	You can select the data to be deleted by product and by location using key figure parameters (`KPRM`). You can delete data for the following time series types: • Universal (UN) • Location Universal (UL) • Point of Sale (POS) For more information, see the report documentation.
Delete obsolete exception message data	Report `/DMF/PURGE_EWB_MESSAGES`	As required	You do not need to specify parameters for this report. You can either execute it directly or schedule it for execution. Which data is purged depends on how you have configured the exceptions in Customizing and on which deletions are performed on the user interface.

Table 15: Manual Tasks for Omnichannel Article Availability

Task	Tool Supporting the Task	Recommended Frequency	Description
Schedule deletion of outdated ATP snapshot entries	Report `/OAA/ATP_SNAPSHOT_DELETION`	As required	If articles are removed from the assortment of an online store, availability information for these articles persists in the ATP snapshot. The report removes these entries. For more information, see the detailed report documentation in the system.

Task	Tool Supporting the Task	Recommended Frequency	Description
Schedule deletion of outdated temporary reservations that have built up over time	Report `/OAA/ATP_RESV_DELETION`	As required	There are two types of reservations: cart reservations and order reservations. You can delete all reservations or delete cart reservations only. For more information, see the detailed report documentation in the system. While it is possible to select both deletion options, best practice in business would be to create and schedule two independent variants, namely one per option. The variant for the *Delete all reservations* option could be scheduled to run every week, while the variant for the *Delete cart reservations only* option could be scheduled to run every 30 minutes, for example.

Table 16: Manual Tasks for Omnichannel Promotion Pricing

Task	Tool Supporting the Task	Recommended Frequency	Description
Purge OPP promotion data	Report `/DMF/PURGE_AGENT`	As required	This report purges OPP promotion data as part of the purging of offers. For more information, see the system documentation of the report.
Archive IDocs for OPP promotion outbound and regular price outbound	*SAP Menu* > *Administration* > *System Administration* > *Administration* and choose *Data Archiving* (transaction code **SARA**).	As required	For more information about archiving IDocs, see the documentation on SAP Help Portal at *Archiving and Deleting IDocs* at http://help.sap.com/saphelp_nw70/helpdata/en/dc/6b821443d711d1893e0000e8323c4f/content.htm.

4.5 Backup and Restore

Use

You need to back up your system landscape regularly to ensure that you can restore and recover it in case of failure. The backup and restore strategy of your system landscape must not only include your strategy for your SAP system, but it must also be included in your company's overall business requirements and incorporated into your entire process flow.

In addition, the backup and restore strategy must cover disaster recovery processes, such as how to recover from the loss of a data center due to a fire. It is important that your strategy specify that normal data and backup data are stored in separate physical locations, so that both types of data are not lost in case of a disaster.

SAP Customer Activity Repository is based on SAP NetWeaver technology; therefore, the SAP NetWeaver backup procedures can also be used for SAP Customer Activity Repository.

More Information

Table 17:

Subject	Path
Backup and recovery processes for ABAP, JAVA, Business Intelligence, or Process Integration	See the Technical Operations Manual for SAP NetWeaver at http://help.sap.com/nw. Choose a release. Choose *System Administration and Maintenance Information* > *Technical Operations Guide* > *Technical Operations Manual for SAP NetWeaver*.
Backup and restore for SAP systems	See SAP Support Portal at http://support.sap.com/support-programs-services/methodologies.html > *Best Practice* > *System/Technical Administration: Backup and Restore for SAP Systems Landscapes*.
Backing up and recovering the SAP HANA database	See SAP Help Portal for SAP HANA Platform at http://help.sap.com/hana_appliance. Choose a release. Choose *System Administration* > *SAP HANA Administration Guide*.

4.6 Load Balancing

For information about load balancing, see the following references:

Table 18:

Topic	Path
Standard functionality of SAP NetWeaver for logon and load balancing	See SAP Help Portal for SAP NetWeaver at http://help.sap.com/nw. Choose a release. Under *System Administration and Maintenance Information*, choose *Technical Operations Manual for SAP NetWeaver* > *Solution Lifecycle Management* > *High Availability* > *SAP NetWeaver AS ABAP: High Availability* > *Unplanned Downtime for SAP NetWeaver AS ABAP* > *Service Configuration for Failure Resilience* > *Message Server-Based Logon and Load Balancing (Redirection)*.
Partitioning and scale-out for SAP HANA	See SAP Help Portal for SAP HANA Appliance software at http://help.sap.com/hana_appliance. Choose a release. Under *System Administration and Maintenance Information*, choose *SAP HANA Administration Guides* > *SAP HANA Administration Guide* > *Scaling for SAP HANA*.
Partitioning of the `/POSDW/TLOGF` table	SAP Note 1719282.
Classify TLOG Tables for SAP Customer Activity Repository Report	See the report documentation (transaction `/POSDW/CLASSIFY_TLOG` in your SAP Customer Activity Repository System) and SAP Note 1980718.
Optionally, backup and restore for the SAP Landscape Transformation (LT) Replication Server (if you wish to start additional processes in SLT) **Note** For information on deployment options, which determine whether replication is necessary, see http://help.sap.com/car *<your release>* > *Installation and Upgrade Information* > *Installation Guide*.	See SAP Help Portal for SAP HANA Appliance software at http://help.sap.com/hana_appliance. Choose a release. Under *System Administration and Maintenance Information*, choose *SAP HANA Technical Operations Manual* > *Administering and Operating SAP HANA Replication Technologies* > *Backup and Recovery of SAP HANA Replication Technologies*.
Partitioning for UDF and DDF	See the *Partition Tables for UDF and DDF (Optional)* section in the *Common Installation Guide* at *<your release>* > *Installation and Upgrade Information* > *Installation Guide*.

Topic	Path
Configure Load Balancing service in DDF	See http://help.sap.com/car ▶ *<your release>* ▶ *Application Help* ▶ *SAP Customer Activity Repository* ▶ *Demand Data Foundation* ▶ *General Services* ▶ *Configure Load Balancing* (including special considerations for demand modeling and forecasting with UDF).

5 High Availability

Use

SAP Customer Activity Repository is based on SAP HANA and SAP NetWeaver technology; all high availability considerations that apply to SAP HANA and SAP NetWeaver, such as increasing system availability, improving performance, and eliminating unplanned downtime, also apply to SAP Customer Activity Repository.

More Information

Table 19:

Topic	Path
General information on high-availability strategies for SAP NetWeaver-based systems	See SAP Help Portal for SAP NetWeaver at http://help.sap.com/nw. Choose a release. Under *Application Help* , choose *Function-Oriented View* > *Solution Life Cycle Management* > *SAP High Availability* .
General information on high availability strategies for SAP HANA based systems	See SAP Help Portal for SAP HANA Appliance software at http://help.sap.com/hana_appliance. Choose a release. Under *System Administration and Maintenance Information*, choose *SAP HANA Technical Operations Manual* > *Administering and Operating SAP HANA* > *High Availability* .

6 Software Change Management

6.1 Introduction

Software Change Management standardizes and automates software distribution, maintenance, and testing procedures for complex software landscapes and multiple software development platforms. These functions support your project teams, development teams, and application support teams.

The goal of Software Change Management is to establish consistent, solution-wide change management that allows for specific maintenance procedures, global rollouts (including localizations), and open integration with third-party products.

This section provides additional information about the most important software components.

6.2 Transport and Change Management

Component Change Management Tools

Table 20:

Component	Solution Manager Maintenance Optimizer Integration	Transport Management Too
RTLCAR	Yes	SAP NetWeaver Transport Organizer
RTLPOSDM	Yes	SAP NetWeaver Transport Organizer
RTLMCFND	Yes	SAP NetWeaver Transport Organizer

6.3 Development Requests and Development Release Management

Use

You use the standard tools and procedures of SAP NetWeaver to transport SAP Customer Activity Repository code extensions or Customizing changes. All such changes are captured by the transport system and are transportable.

More Information

Table 21:

Topic	Path
Change and Transport System	See SAP Help Portal for SAP NetWeaver at http://help.sap.com/nw. Choose a release. Under *System Administration and Maintenance Information*, choose *Technical Operations for SAP NetWeaver* > *Administration of Application Server ABAP* > *Change and Transport System*.
Change Management for SAP HANA-based systems	See SAP Help Portal for SAP HANA Appliance software at http://help.sap.com/hana_appliance. Choose a release. Under *System Administration and Maintenance Information* , choose *SAP HANA Technical Operations Manual* > *Administering and Operating SAP HANA* > *Change Management*.
Manual ABAP on SAP HANA correction process	See SAP Note 1798895.

6.4 Support Packages and Patch Implementation

Use

We recommend that you implement SAP NetWeaver, SAP HANA and SAP Customer Activity Repository support package stacks, which are sets of support packages and patches for the respective product version that must be used in the given combination. The technology for applying support packages and patches will not change.

You can find detailed information about the availability of SP stacks for SAP Customer Activity Repository on SAP Service Marketplace at http://service.sap.com/sp-stacks. See the corresponding Release Information Notes (RIN) before you apply any support packages or patches of the selected SP Stack.

Use the Maintenance Optimizer (transaction `DSWP`) in SAP Solution Manager to select, download, and install the needed usages, or software components and required support packages.

More Information

Table 22:

Topic	Path
SAP Solution Manager	See SAP Help Portal for SAP Solution Manager at http://help.sap.com/solutionmanager.
SAP Solution Manager Change Management Maintenance Optimizer	See SAP Service Marketplace at http://service.sap.com/solman-mopz.
SAP Add-on Installation Tool	See the documentation for transaction `SAINT` in your SAP system.
Implementation of support packages and possible side effects	See http://service.sap.com/patches *SAP Support Packages in detail*.

7 Troubleshooting

7.1 Troubleshooting Information Specific to On-Shelf Availability

Viewing Back-End Error Messages

Back end error messages are saved in the Gateway system. To access these error messages, perform the following steps:

1. Start transaction `/IWFND/ERROR_LOG`.
2. Select the log entry, and choose *Error Context*.
3. Choose *Application Log*.
4. Note down the error number of each message with the following message text: `This is an external message. Access message text via details`
5. Choose *Detail exists* to view the text of each external error message.

Cleaning Up Gateway Cache

You can clean up the cache on the Gateway server by running transaction `/IWFND/cache_cleanup`. Cleaning up cache on the back end using transaction `/IWBEP/cache_cleanup` is also recommended.

Verifying BAdI Implementations

The On-Shelf Availability functionality requires that the BAdIs found in Customizing under *SAP Customizing Implementation Guide* > *SAP Customer Activity Repository* > *On-Shelf Availability* > *Enhancements Using Business Add-Ins* have an implementation.

In the case that a BAdI does not have an implementation specific to your business scenario, you can expect the following behavior from the On-Shelf Availability functionality.

Table 23:

BAdI Missing Implementation	Result
Process Shelf Status Change Notifications	No error occurs, no on-shelf availability alerts will be reported.

BAdI Missing Implementation	Result
Retrieve Algorithm Detection Time	Runtime error in On-Shelf Availability when executing the OSA algorithm.
Retrieve Department Data	Runtime error in OData Service.
Retrieve Sub-Department Data	Runtime error in On-Shelf Availability when executing the OSA algorithm.
Retrieve Product Data	Runtime error in OData Service.
Retrieve Additional Product Information Data	No error occurs, no additional product information (such as promotion and layout) will be available.
Retrieve Listed Product Data	Runtime error in On-Shelf Availability when executing the OSA algorithm.
Retrieve Product Inventory Data	No error occurs, product inventory information will not be available.
Retrieve Image URL Data	No error occurs, product images will not be available.
Retrieve Store and Factory Calendar Data	Runtime error in OData Service.

Troubleshooting On-Shelf Availability Algorithm Results

The following Customizing settings under *SAP Customizing Implementation Guide* > *SAP Customer Activity Repository* > *On-Shelf Availability* > *Initialize On-Shelf Availability Algorithm* can have the most impact on the results of the OSA algorithm:

- Level Of Granularity
  This setting impacts on which level the intra-week pattern analyzer step of the OSA algorithm will be executed: on product, sub-department or store level. For example, when the *Level of Granularity* is set to 2000, you need transactional information containing 2000 x 2.5 times the number of instances at which the product was sold during the period specified in the *Number of Weeks* setting. To run the intra-week pattern analyzer step at the product level, the product must have been sold 5000 times at the store considered by the algorithm. To run the intra-week pattern analyzer step at the sub-department level, products of that sub-department must have been sold 5000 times at the store considered by the algorithm. To run the intra-week pattern analyzer step at the store level, 5000 products must have been sold by the store in the specified *Number of Weeks* setting.
- Minimum Transaction Threshold
  This setting determines which products will be considered when the estimation model step of the OSA algorithm is executed: products included in fewer transactions than specified in the *Minimum Transaction Threshold* setting during the period specified in the *Number of Weeks* setting will be excluded. For example, if the *Minimum Transaction Threshold* setting is 50 and the *Number of Weeks* is set to 13, then a product will be excluded by the estimation model if it is sold in fewer than 50 transactions during a 13 week period.

7.2 Troubleshooting Information Specific to Omnichannel Article Availability (OAA)

Table 24:

Symptom	Cause	Solution
In SAP Hybris Commerce, there is no availability information in the cart.	Availability data could not be retrieved from SAP Customer Activity Repository.	Check whether the SAP Customer Activity Repository system is up and running.
		If the SAP Customer Activity Repository system is up and running: In SAP Hybris Commerce, check the log files. Requests and responses for the 3 OAA REST services are logged in the standard application log files of SAP Hybris Commerce. For error analysis, set the log4j log level for logger package `com.sap.retail.oaa.commerce.services` to *DEBUG* in the hybris administration console (hac), under *Platform* > *Logging*. Repeat process and check log files again.
		If there are errors in the log files: In SAP Hybris Commerce, check whether Backoffice Customizing is correct. If there are no errors in the log files: Check whether the OAA tables have been replicated from SAP Retail to SAP Customer Activity Repository (SLT replication, see SAP Note 2263205). For OAA, the following tables must be replicated via SLT: • VBAK • MARA • MARM • T001W • Tables required for Inventory Visibility view `sap.is.retail.car/InventoryVisibilityWithSalesOrderReservedQuantity`
		If SLT replication is okay: In SAP Customer Activity Repository, check the ATP snapshot (transaction SE11, table `/OAA/ATP_DC_HDR` and `/OAA/ATP_DC_ITM`, external view `/OAA/STORE_AVAIL`).
		If these tables and this view are empty: In SAP Customer Activity Repository, check whether report `/OAA/ATP_CALL_PRECALC` was scheduled (transaction **SM37**) and was executed successfully (transaction **SLG1**, object `/OAA/ATP`).
		If the report was executed successfully: In SAP Retail, check scheduled jobs (transaction **SM37**; see prefix for jobs set in ATP profile in Customizing activity *Define ATP Parallelization Profiles*).

Symptom	Cause	Solution
In SAP Hybris Commerce, rough stock indicators (RSI) are not updated.	RSI data has not reached the Solr index in SAP Hybris Commerce.	In SAP Customer Activity Repository, check whether the RSI IDoc was sent (transaction **SM37**: job monitor of report `/OAA/ATP_RSI_GENERATION`).
		If the IDoc was not sent: Check whether errors occurred during generation of the IDoc (transactions **WE05**, **BD87**). If the IDoc was sent: In the Backoffice application of SAP Hybris Commerce, check whether the rough stock indicators exist in the virtual warehouse that is to be the receiver of this information.
		If the rough stock indicators do not exist in the virtual warehouse, check the standard logging of the Hybris Data Hub. You can access the information contained in the Hybris Data Hub directly using the following standard browser GET requests: • http://localhost:8080/datahub-webapp/v1/pools/SAPOAARSI_INBOUND_POOL/items/RawCARRsi.xml • http://localhost:8080/datahub-webapp/v1/pools/SAPOAARSI_INBOUND_POOL/items/CanonicalStockLevel.xml If the rough stock indicators exist in the virtual warehouse, check whether the Solr index was updated correctly.
In SAP Hybris Commerce, the error message *Failed to place the order* is displayed when you click *Place Order* in checkout.	Sourcing was called but might have failed.	Check the logs in SAP Hybris Commerce for error messages.
In SAP Customer Activity Repository, there is no F4 help available for ATP parallelization profiles in Customizing activity *Define OAA Profiles*.	Table OAA_ATP_PROFILE has not been replicated from SAP Retail.	Check SLT replication (see SAP Note 2263205).

8 Support Desk Management

Use

Support Desk Management enables you to set up an efficient internal support desk for your support organization that seamlessly integrates your end users, internal support employees, partners, and SAP Active Global Support specialists with an efficient problem resolution procedure.

For support desk management, you need the methodology, management procedures, and tools infrastructure to run your internal support organization efficiently.

Remote Support Setup

You can set up a read-only user for remote support purposes that provides access to the consuming applications and SAP NetWeaver transactions.

The following roles should be assigned to this user:

- `SAP_QAP_BC_SHOW` (for SAP NetWeaver)
- Role of the consuming application

If you want to use SAP remote services (for example, SAP EarlyWatch or Remote Consulting), or if you would like to permit an SAP support consultant to work directly in your system to make a more precise problem diagnosis, then you need to set up a remote service connection.

Additionally, there exists an ABAP role for read-only access for remote support that is also relevant. This role (`SAP_RCA_SAT_DISP` for ABAP) is available in the STPI plug-in and is generated when a managed system is connected to SAP Solution Manager.

Should any additional application-specific functionality be necessary for use by an SAP support consultant, then an applicable role should be defined providing the appropriate authorization(s) and assigned to the SAP support consultant's user login.

Reporting Customer Incidents

When you report an incident (that is, create an SAP support message) for your installation, you must specify an application component. The most relevant components for SAP Customer Activity Repository are listed as follows:

- `CA-RT-CAR-PIP` - to report an incident for the POS Data Transfer and Audit module (POS Data Management).
- `CA-DDF-RT` - to report an incident for the Demand Data Foundation (DDF) module.
- `CA-DDF-RT-UDF` - to report an incident for the Unified Demand Forecast (UDF) module. This includes messages relating to the UDF AFL and the *Analyze Forecast* SAP Fiori app.
- `CA-RT-CAR-INT` - to report an incident for integration with the DDF/UDF modules and integration between the repository and consuming applications.
- `CA-RT-CAR-ANA` - to report an incident for SAP HANA content delivered with SAP Customer Activity Repository.
- `CA-RT-CAR-OAA` - to report an incident for Omnichannel Article Availability that is related to SAP Customer Activity Repository

`LO-MD-PL` and `LO-MD-OAA` - to report an incident for Omnichannel Article Availability that is related to SAP Retail
`CEC-COM-BSC-OAA` - to report an incident for Omnichannel Article Availability that is related to OAA standard extensions and OAA Data Hub extensions of SAP Hybris Commerce, integration package for SAP for Retail

- `CA-DDF-RT-PPR` - to report an incident for Omnichannel Promotion Pricing (OPP) that is related to SAP Customer Activity Repository.
- `CA-RT-CAR` - to report an incident for general issues with SAP Customer Activity Repository that cannot be easily classified into one of the categories above.

For a complete component list, see the SAP Support Portal at http://support.sap.com/swdc *Software Downloads* *By Alphabetical Index (A-Z)* *C* *CAR RETAIL APPLICATIONS BUNDLE* *CAR RETAIL APPL BUNDLE 1.0* *Info* *Customer Support*.

More Information

- If the incident relates to a SAP HANA component, see SAP Note 1976729 for a complete component list.
- For more information about reporting incidents, see the SAP Support Portal at http://support.sap.com/ *Knowledge Base & Incidents* *Report an Incident*.
- For contact information for your local customer interaction center, see SAP Note 560499.

9 Appendix

9.1 Transaction Log (TLOG) Data Model and Storage

POS data is captured in a format called a Transaction Log (TLOG). TLOGs capture all the attributes of a store's sales transaction. This information is used to log many attributes about the sale, such as customer information, sales price, discount price, quantities, item descriptions, and much more. Such information is used in backend store systems for sales auditing, reporting, and input in to additional Retail planning applications.

SAP Customer Activity Repository is an application that serves as a central repository for storing TLOG data. In addition to storing and providing many business functions that operate directly on the TLOG data (for example, Sales Audit), SAP Customer Activity Repository also captures and exposes the data in a standard way so that it can be easily consumed by analytical, planning, and other follow-on applications.

Business Transactions

The POS transaction data model is the most important business object in the POS Inbound Processing Engine (PIPE). At the POS, different kinds of business transactions can be recorded by a cash register, for example:

- POS sales
- Cash pay-in/pay-out
- Inventory Adjustments (for example, spoilage or unexpected goods receipt)
- Register closing (for example, count cash amount in the till)
- Statistical events (for example, cash drawer opened, store opening, and cashier log on)

In order to simplify the programming interfaces, the SAP Customer Activity Repository POS transaction data model is based on a generic approach that allows different kinds of POS transactions to be stored in the same database tables. A qualifier, called a `transaction type code`, is used to distinguish which kind of business transaction the POS transaction reflects. For one business transaction, there can be more than one transaction type. For example, a retail transaction can be either a sale or an employee sale, but both are sales transactions.

The figure Business Transaction Types for POS Transactions shows the business transactions that can be used to classify generic POS transactions. Technically, this classification is used to define a subset of segments that can be used by a specific business transaction. For example, a financial transaction may not include any goods movement items because this sub-structure belongs to goods movement transactions only.

Located at the header level of a POS transaction, the business transaction field uses fixed values to indicate the transaction type, as shown in this figure.

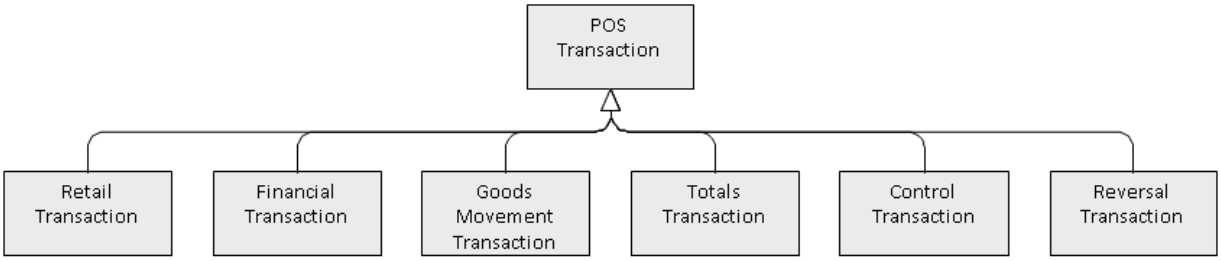


Figure 2: Business Transaction Types for POS Transactions

The following sections describe the relationship of the POS transactions on the segment level. Segments are stored in internal tables. They can contain more than one line. Although it is technically possible to store multiple lines in all segments, some segments may contain only a single record. In the following sections, the hierarchy of the segments and the cardinality is explained in detail.

Common Segments

Transaction Header

All POS transactions share the same header segment. Some header fields are mandatory and must be filled out in order for SAP Customer Activity Repository to process the data. Some header fields are optional in SAP Customer Activity Repository but are required from a business point of view.

The transaction header contains the following information:

Table 25: Transaction Header Fields

Field Name	Description	Role in SAP Customer Activity Repository	Role at POS	Data Type/Length
Retail Store ID	A unique identifier of the store where the POS transaction was entered. This field usually contains the customer number of the plant in ERP to which the store is assigned.	Key	Key	Char/10

Field Name	Description	Role in SAP Customer Activity Repository	Role at POS	Data Type/Length
Business Day	The date to which the POS transaction is assigned. In Retail, it is referred to as the business day or posting date. In some cases, the business day is not the actual date on which the transaction transpired but to which it is assigned. For example, in a 24/7 business, a cashier's work shift can be from 23:00 until 03:00 and sales transactions that transpire after 00:00 are assigned to the previous day.	Key	Key	Date
Transaction Index	A counter that uniquely identifies POS transactions for the same store and same business day. This field is available only in SAP Customer Activity Repository and has no representation in the external interfaces or at the POS.	Key	-	Integer/4
Transaction Type Code	A four-digit code used to indicate the type of POS transaction.	Mandatory Attribute	Mandatory Attribute	Char/4
Workstation ID	A number that identifies the cash register or machine where the POS transaction was entered.	Optional Attribute	Key	Char/10

Field Name	Description	Role in SAP Customer Activity Repository	Role at POS	Data Type/Length
Transaction Number	A number used to identify a POS transaction. In SAP Customer Activity Repository, the key fields (store, business day, workstation ID, transaction type code, and transaction number) do not need to be unique because SAP Customer Activity Repository uses a counter at the database level. However, the key field combination must be unique at the POS.	Optional Attribute	Key	Char/20
Begin Time Stamp	The date and time the POS transaction was started. When the cashier enters a new POS transaction, the time is stored in the transaction header. This information is required to put the transactions in sequential order, and is also used to assign retail transactions to totals transactions (see Totals Transactions) for the balancing or short/over calculation.	Mandatory Attribute	Mandatory Attribute	Char/14

Field Name	Description	Role in SAP Customer Activity Repository	Role at POS	Data Type/Length
End Time Stamp	The date and time the POS transaction was completed. This field is mandatory in SAP Customer Activity Repository. It may be filled with the begin time stamp, unless a second time stamp is available. By completing a POS sale, the time stamp is also entered in the transaction header.	Mandatory Attribute	Optional Attribute	Char/14
Department	A number that identifies the department of the store.	Optional Attribute	Optional Attribute	Char/10
Operator ID Qualifier	It is used to identify the cashier who entered the POS transaction or the user who entered the business transaction.	Optional Attribute	Optional Attribute	Char/30
Operator ID	It is used to identify the cashier who entered the POS transaction or the user who entered the business transaction.	Optional Attribute	Optional Attribute	Char/30

Field Name	Description	Role in SAP Customer Activity Repository	Role at POS	Data Type/Length
Transaction Currency	The transaction currency to which all retail line items are assigned. For retail transactions, this field is optional because all retail transactions in the same store are usually assigned to the same currency, even if the payment can be done in different currencies. The transaction currency can differ from the tender currency. If the transaction currency is not provided, a default currency must be defined in the SAP Customer Activity Repository Customizing. However, for tender totals, the field is mandatory as there can be totals for different currencies.	Attribute	Optional attribute	Char/5
Partner ID Qualifier	This field indicates if the transaction is from a customer or business partner.	Optional Attribute	Optional Attribute	Char/1
Partner ID	It is used to store the SAP customer number, SAP personnel number, or a free text value.	Optional Attribute	Optional Attribute	Char/13
Receipt Handling Time	Specifies the time, to the millisecond, required to complete the handling of the receipt.	Optional Attribute	Optional Attribute	Dec/13,3
Register Time	Specifies the time, to the millisecond, required for the registering of the transaction line items.	Optional Attribute	Optional Attribute	Dec/13,3

Field Name	Description	Role in SAP Customer Activity Repository	Role at POS	Data Type/Length
Tendering Handling Time	Specifies the time, to the millisecond, required to complete the transaction payment (tender).	Optional Attribute	Optional Attribute	Dec/13,3
Pause Time	Specifies the time, to the millisecond, that the cash register spends in pause mode between two transactions.	Optional Attribute	Optional Attribute	Dec/13,3
Training Time	Specifies the time, to the millisecond, that the cash register spends in training mode.	Optional Attribute	Optional Attribute	Dec/13,3
Drawer Number Used at POS Client	Specifies the cash drawer identifier used at a POS client.	Optional Attribute	Optional Attribute	Char/10
Customer ID from POS	Specifies the customer identifier.	Optional Attribute	Optional Attribute	Char/16
Customer Age	Specifies the age of the customer.	Optional Attribute	Optional Attribute	Integer/5
Customer Identifier Entry Method	Specifies the method used to enter the customer ID.	Optional Attribute	Optional Attribute	Char/1
Reference to Original Receipt for Retail Store ID	Specifies the retail store identifier of the referenced transaction.	Optional Attribute	Optional Attribute	Char/10
Referenced to Original Receipt for Posting Date	Specifies the posting date of the referenced transaction.	Optional Attribute	Optional Attribute	Date
Reference to Original Receipt for Workstation ID	Specifies the POS number (cash register number) of the referenced transaction.	Optional Attribute	Optional Attribute	Char/10

Field Name	Description	Role in SAP Customer Activity Repository	Role at POS	Data Type/Length
Reference to Original Receipt for Transaction Number	Specifies the transaction identifier (receipt number) of the referenced transaction.	Optional Attribute	Optional Attribute	Char/20
Reference to Original Receipt for Start Timestamp	Specifies the start timestamp, as appears on the referenced transaction	Optional Attribute	Optional Attribute	Char/14
Reference to Original Receipt for Line Item Number	Specifies the original line item number of the referenced transaction.	Optional Attribute	Optional Attribute	Char/10
Reason	Specifies the reason code for referencing data from the original receipt.	Optional Attribute	Optional Attribute	Char/4
Logical System	Identifies the source system for data	Optional Attribute	Optional Attribute	Char/10

Post Void Details

Post void details are included in the header information. Post void details provide two types of information:

- A flag to mark a transaction to be voided
- A reference to another transaction that was voided. Note that this information can only be part of a post void transaction. See Post Void Transactions.

Any POS transaction can be flagged to be voided; therefore the structure for post void details can be used in combination with all business transaction types. However, only post void transactions can contain a reference to a voided transaction.

SAP Customer Activity Repository tasks can be configured to filter out voided transactions automatically.

For more information on post void details, see Post Void Transactions.

Extensions

The POS transaction data model used by SAP Customer Activity Repository includes predefined locations where you can insert extension segments to enhance the standard data model with customer-specific fields.

Extensions can exist on different levels in a transaction, therefore extension segments can occur on the transaction header level, on the item level (for example, retail line item, tender, or goods movement item), or even lower than the item level.

For more information, see Extensibility and Extensions.

Transactional Additionals

The transaction additionals segment contains information about the entry of the transaction, for example, a transaction reason code or a training transaction indicator.

Retail Transactions

A retail transaction contains the most relevant information about a POS sale, such as retail line items and tender information.

A retail line item reflects a quantity of a single article that was scanned or manually entered at the POS. For each retail line item, there can be discounts, taxes, loyalty information or commission information that applies to it. Depending on the business case or business use, discounts, taxes, and loyalty information may can also exist at the transaction level.

Some fields in the retail line item are used very rarely. These are stored in a sub-structure called `retail additionals`.

After all items have been entered at the POS, and the customer has paid, the relevant information is stored in the `tender segment`, which stores information about the means of payment. For credit card or debit card payments, there are sub-structures that contain information about the card number, card owner, and the authorization code sent by the credit card authorization service. If the credit card information is available only in an encrypted format, it is stored in the `secure bin data` segment.

Information about the customer, such as age, phone number and, address, can be added at the POS by use of the `customer details` structure which offers the same kind of enhancement concept as the `extensions` structures (see Extensibility and Extensions).

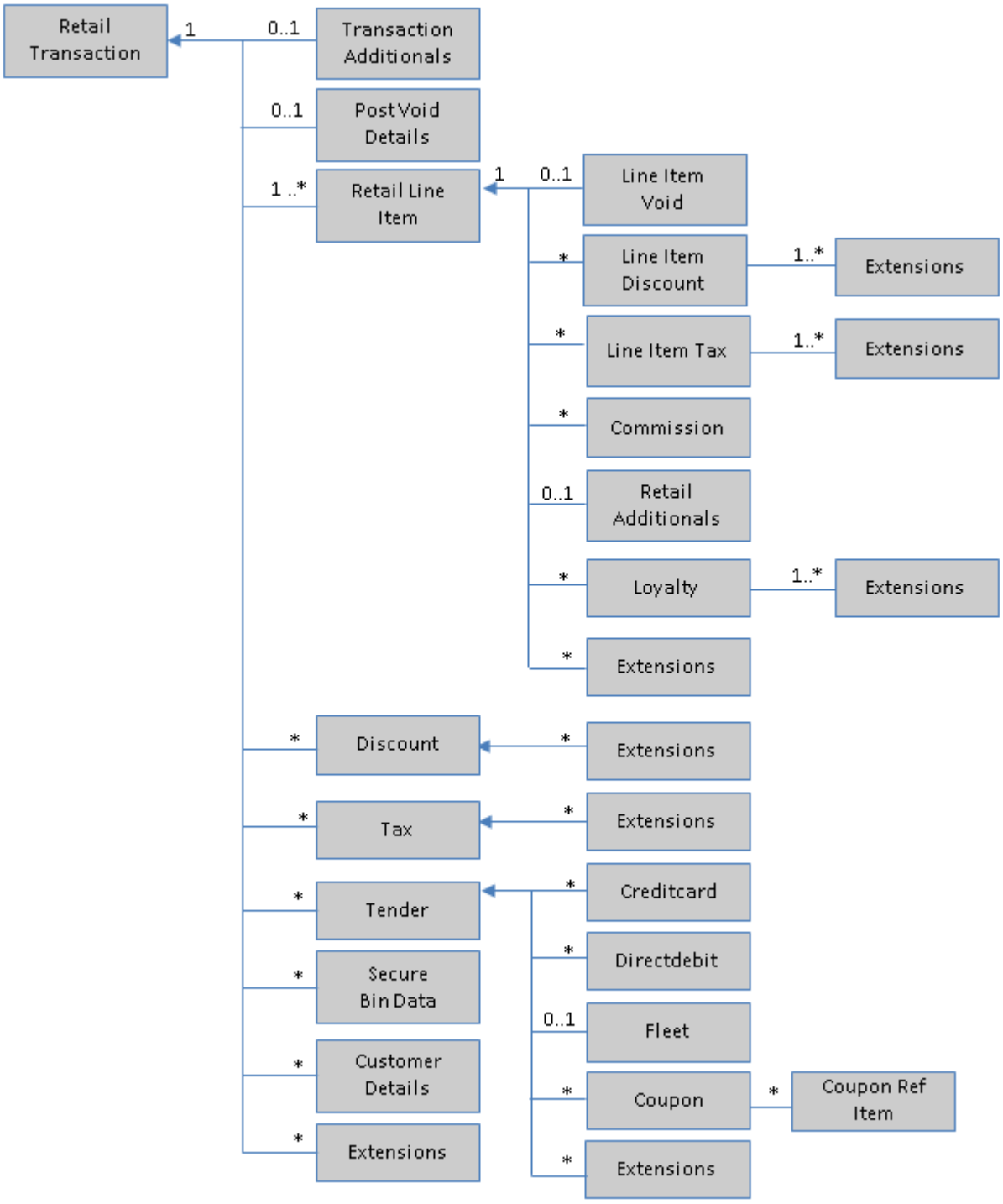


Figure 3: Structure of a Retail Transaction

Totals Transactions

Totals transactions are used to process aggregated information for different kinds of POS transactions such as:

- Retail Totals: Aggregated retail amount and number of items for each retail type code
- Tax Totals: Aggregated tax amount and number of items for each tax type code

- Discount Totals: Aggregated reduction amount and number of items for each discount type code
- Tender Totals: Aggregated tender amount, number of items, actual amount, short amount, over amount, removed amount, and other details for each type code
- Cashier Totals: Aggregated statistical information for loss prevention purposes, for example, the number of retail transactions with a value of zero, the number of cash drawer openings, and other details

At the end of a day or a cashier shift, the cash register can send a summary record that contains these different kinds of totals.

The summary information has different purposes:

- Technical Balancing: Identifies missing or duplicate detailed information by comparing the summary records and POS transactions
- Short/Over Processing: Identifies differences between the actual amount and the expected tender amount (especially cash) at a workstation or cashier level, and sends the differences to financials
- Loss Prevention: Identifies fraudulent activities at the POS by use of statistical patterns, especially the cashier totals

Technically, it is possible to include different kinds of totals in the same totals transaction.

As a rule, the two time stamps that are part of the transaction header are used to identify the time interval for which the totals have been calculated. If the attributes at the header level, such as operator ID or workstation ID (see Transaction Header) are filled, the summary information is associated to a specific cashier or cash register. Otherwise they are valid for all cashiers or workstations.

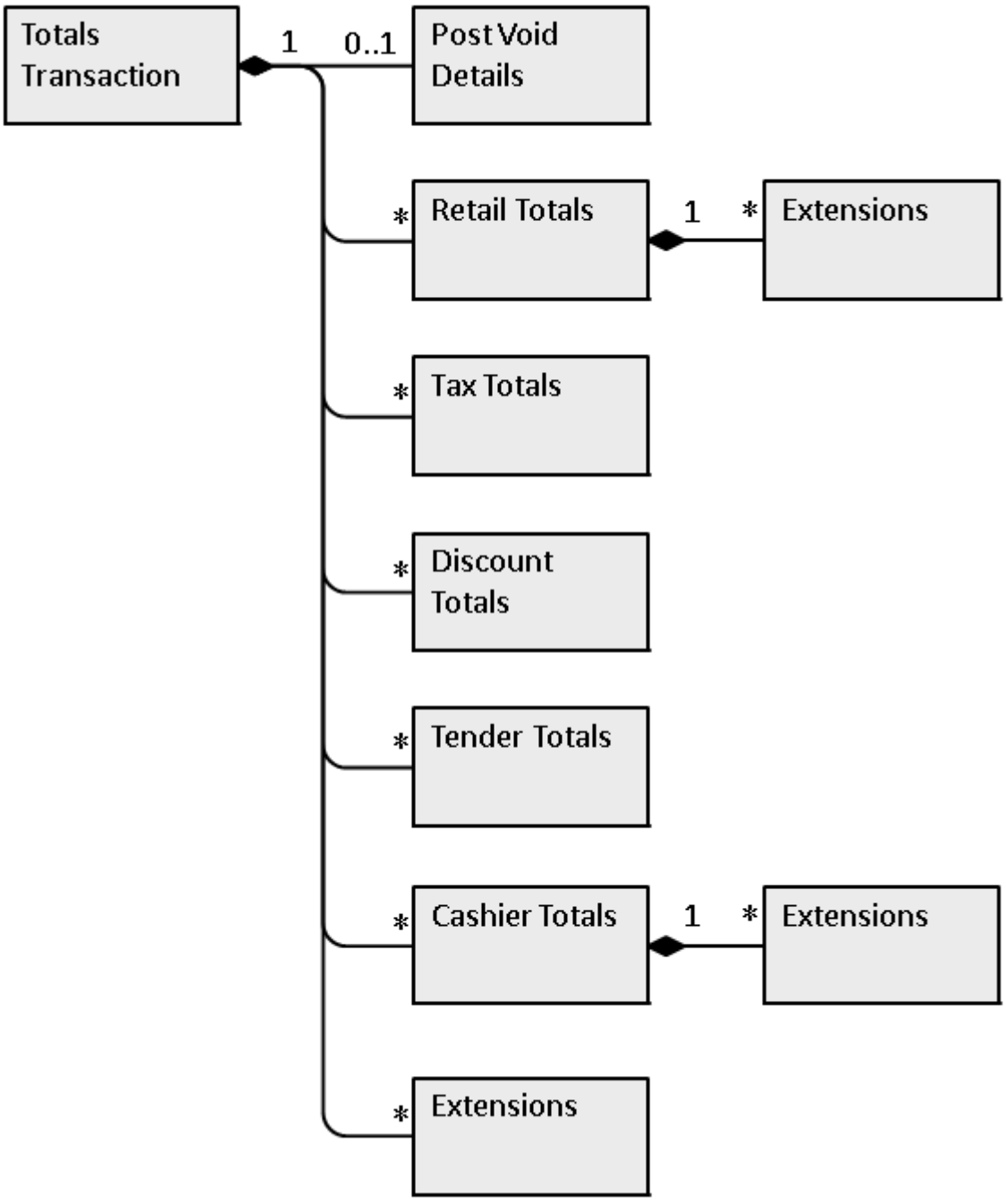


Figure 4: Structure of a Totals Transaction

Goods Movements

Goods movement transactions are used to enter goods movements at the POS. They can be entered for reasons such as:

- Spoilage: In this case, the quantity of goods available for sale is decreased and has to be adjusted in inventory management

- Transfer posting: Goods can be transferred from one store to another without any kind of settlement
- Reserve goods: A customer can call and ask to reserve an article for pickup the next day. If this transaction is to be reflected in the inventory account, the article can be transferred from the stock at hand to the reserved stock.

The goods movement transaction consists of a transaction header and a number of goods movement items, reflecting the inventory-related movement at the article level.

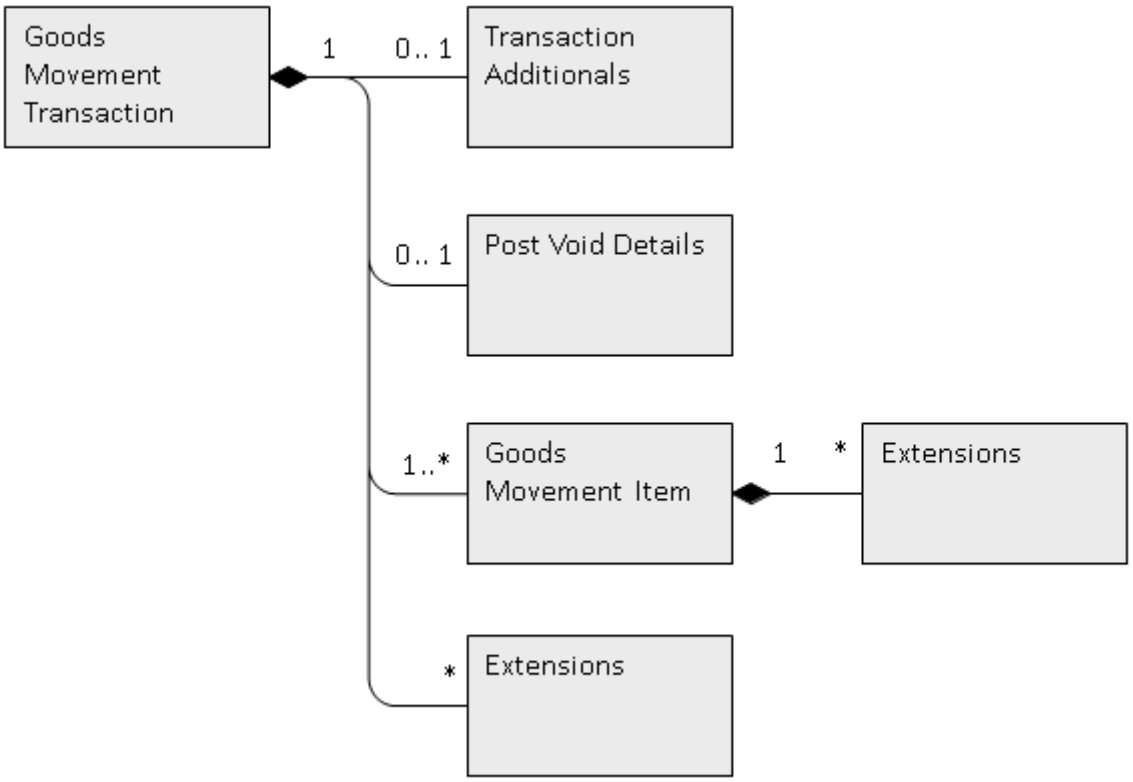


Figure 5: Structure of a Goods Movement Transaction

Financial Movements

Financial movements represent financial transactions with or without an impact on the cash amount at the POS, such as:

- Cash removals or deposits: Money is removed from the cash register, for example, as a deposit it is brought to the bank, or new change is paid-in. In these cases, the financial amount is moved within the company.
- Pay-In and Pay-Out Transactions: For example, money is paid-in for services, wages, or a pay-in for a customer, or paid-out for wages. In these cases, the financial amount is moved out of or into the company.

The financial transaction consists of a `transaction header` and a financial movement item, which contains an amount of money to be booked on a certain account.

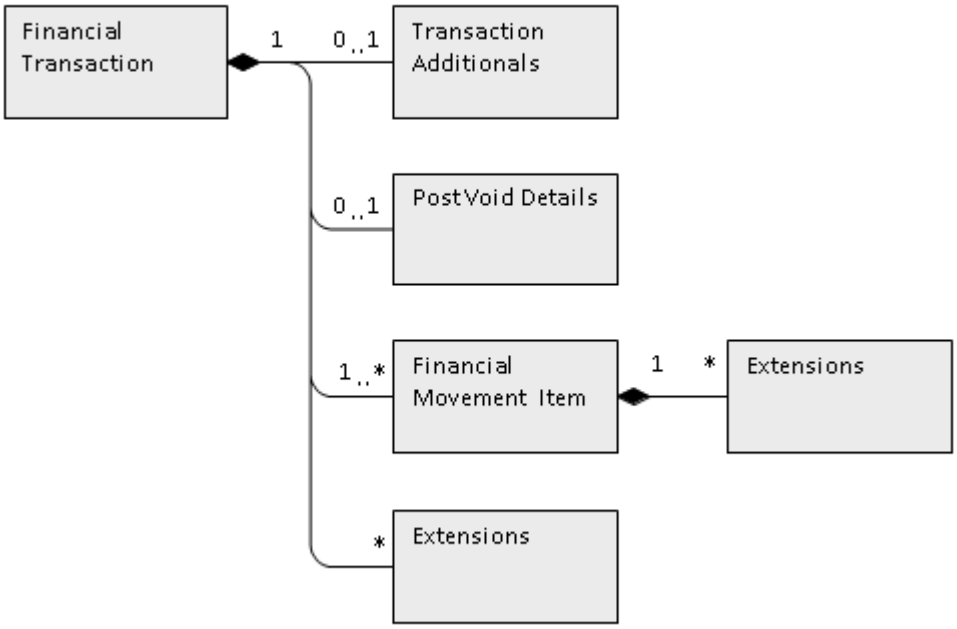


Figure 6: Structure of a Financial Movement Transaction

Control Transactions

Control transactions represent events that are tracked for statistical reasons only or to document certain processes, such as:

- Cashier Logon/Logoff or Logon Attempt: For loss prevention purposes, data about the time when a cashier logged on and off a cash register is collected
- Open Register/Close Register: For loss prevention purposes, data about the time when a cash drawer was opened without a corresponding sales transaction is collected
- Repeat Printout: Records when a cashier prints out for a second time
- Store Opening: The time the store opens
- Suspend/Retrieve Transaction: For detecting fraud patterns, data about suspended transactions is collected

A control transaction consists of a transaction header. It is classified by a transaction type code and a timestamp. If more information needs to be transferred, an extension segment can be used.

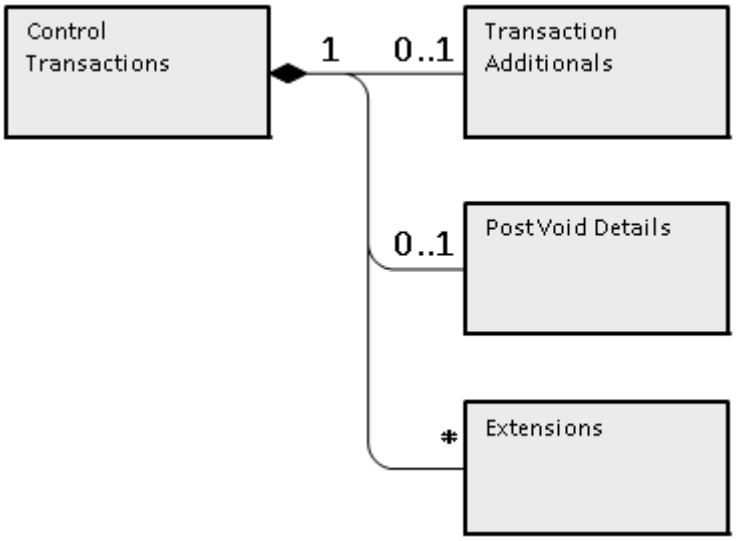


Figure 7: Structure of a Control Transaction

Post Void Transactions

A post void transaction represents the reversal of a POS transaction that was previously processed. For several business reasons and in unusual cases, it can be necessary to cancel an entire POS transaction, for example, if a POS sale has been completed but the customer is not able to pay, or a goods movement was booked by mistake.

There are two possible post void scenarios:

1. The original POS transaction has already been processed in the back-end system.
   In a trickle-feed scenario, POS transactions are sent to SAP Customer Activity Repository many times during the day. In this case, the original POS transaction has already been processed and can no longer be marked as a voided transaction at the cash register.
2. The original POS transaction has not yet been transferred to the back-end system.
   Because sales transactions are uploaded only once a day, the cash register will automatically flag the original POS transaction to be voided. In this case, no post void transaction is necessary because the original sale can be flagged as a voided sales transaction.

In the second case, the post void transactions need to be transferred to SAP Customer Activity Repository because the cash register has already marked the original transaction to be “invalid”. If this is technically not possible or if the first case applies, the reversal processing needs to be done in SAP Customer Activity Repository.

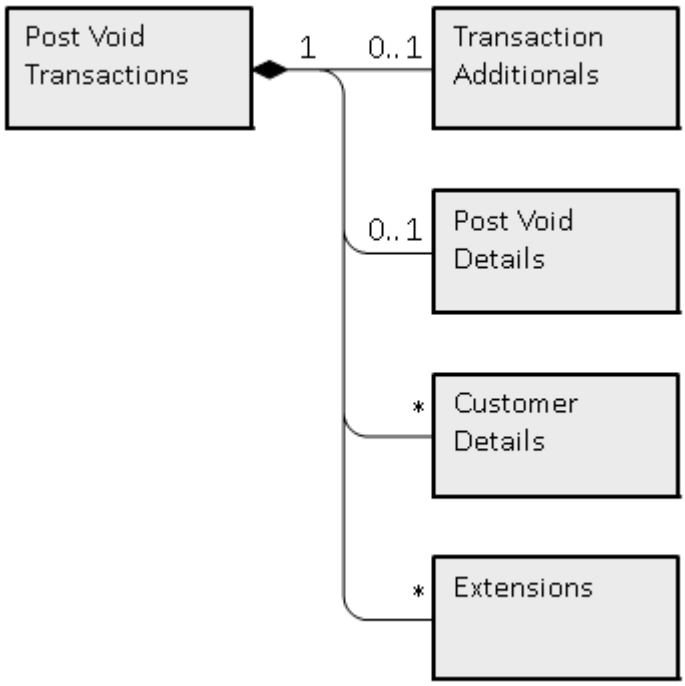


Figure 8: Post Void Transactions

POS Transaction Tables (/POSDW/TLOGF)

In SAP Customer Activity Repository, POS transactions are stored in one table, the `/POSDW/TLOGF` table. This table has the following characteristics:

- Persisted only in the SAP HANA database
- No BLOB fields
- Column-based
- Can store up to two years of non-aggregated POS transaction data. Note that the amount of data stored is deployment-specific and is determined by the customer.

/POSDW/TLOGF Table

In the SAP Customer Activity Repository application layer, `/POSDW/TRANSACTION_INT` structure is the internal representation of the `POS` transaction data.

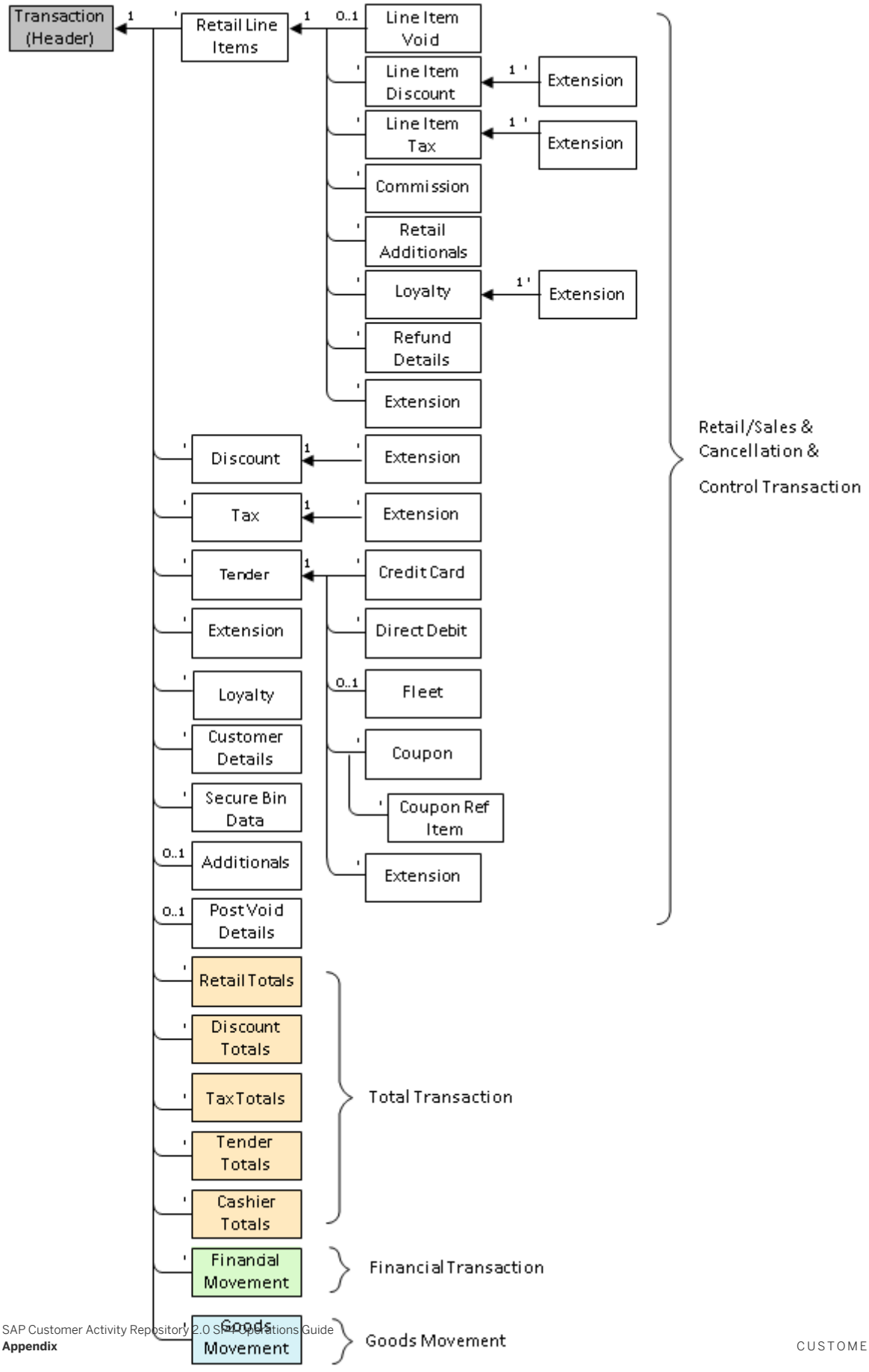


Figure 9: POS Transaction Structure

In the database layer, the POS transaction data is stored in the /POSDW/TLOGF table.

The /POSDW/TLOGF table is a column-based, flattened version of the /POSDW TRANSACTION_INT structure, where all the fields of the structure are stored in one table.

Flattening the TLOG Data Model into /POSDW/TLOGF

As described in the previous sections, POS transactions are stored as a tree structure in /POSDW/TRANSACTION_INT. The root node of a POS transaction contains header information such as transaction type and transaction number. The header fields are common to all POS business transaction types. In addition to the header fields, there are tables in the data structure that represent information from different business transaction types.

In order to transform this tree structure into a flat table (that is, a table that contains no additional tables), the approach is similar to the approach previously used by SAP POS DM 1.0 to supply BW DataSources: a record qualifier attribute is introduced for each row. This is not the same record qualifier that was used for POS analytics. Although similar, the /POSDW/RECORDQUALIFIERID data element is specific to the /POSDW/TLOGF table. For more information, see SAP Note 811393.

For a flattened TLOG data model (/POSDW/TLOGF), the following record qualifiers are used:

Table 26: Record Qualifiers

Record Qualifier	Description
1	Transaction Header
2	Post Void Details
3	Additionals
4	Customer Details
5	Retail Line Item
6	Discount
7	Discount Extension
8	Tax
9	Tax Extension
10	Line Item Void
11	Line Item Discount
12	Line Item Discount Extension
13	Line Item Tax
14	Line Item Tax Extension
15	Line Item Commission

Record Qualifier	Description
16	Line Item Extensions
17	Line Item Retail Additionals
18	Line Item Loyalty
19	Line Item Loyalty Extension
20	Line Item Refund Details
21	Tender
22	Financial Movement
23	Goods Movement
24	Goods Movement Extension
25	Extension
26	Loyalty
27	Loyalty Extension
29	Financial Movement Extension
30	Tender Credit Card
31	Tender Direct Debit
32	Tender Fleet
33	Tender Extension
34	Retail Totals
35	Tax Totals
36	Tender Totals
37	Cashier Totals
38	Cashier Totals Extension
39	Discount Totals
40	Tender Coupon

Extensibility and Extensions

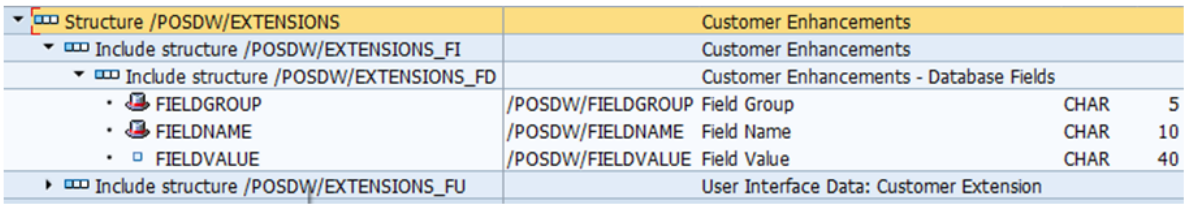
As comprehensive as the SAP Customer Activity Repository POS transaction data model is, you can enhance it if you need to store non-standard data directly in each transaction record. For example, you can store comments

that a cashier enters about a particular POS transaction directly in the POS transaction log. There are no standard fields to store cashier comments in the TLOG data model, therefore you use an extension segment.

Extension segments support customer-specific fields by storing them without having to alter the table definition. The extension segment concept also provides customers with the flexibility to store and process the extensions together with the rest of the transaction.

Extensions and the Internal TLOG Structure (/POSDW/TRANSACTION INT)

The SAP Customer Activity Repository POS transaction data model handles customer enhancements and extensions by including tables of name-value pairs `(/POSDW/TT_EXTENSIONS` with line type `/POSDW/EXTENSIONS`) at predefined locations as extension segments.



Structure /POSDW/EXTENSIONS		Customer Enhancements		
Include structure /POSDW/EXTENSIONS_FI		Customer Enhancements		
Include structure /POSDW/EXTENSIONS_FD		Customer Enhancements - Database Fields		
FIELDGROUP	/POSDW/FIELDGROUP	Field Group	CHAR	5
FIELDNAME	/POSDW/FIELDNAME	Field Name	CHAR	10
FIELDVALUE	/POSDW/FIELDVALUE	Field Value	CHAR	40
Include structure /POSDW/EXTENSIONS_FU		User Interface Data: Customer Extension		

Figure 10: /POSDW/EXTENSIONS Structure

These extensions exist on different levels: there are extension segments at the header level, at the item level (such as retail line items, tender movement items or goods movement items), and at lower levels. The field names can be grouped in order to reproduce data structures.

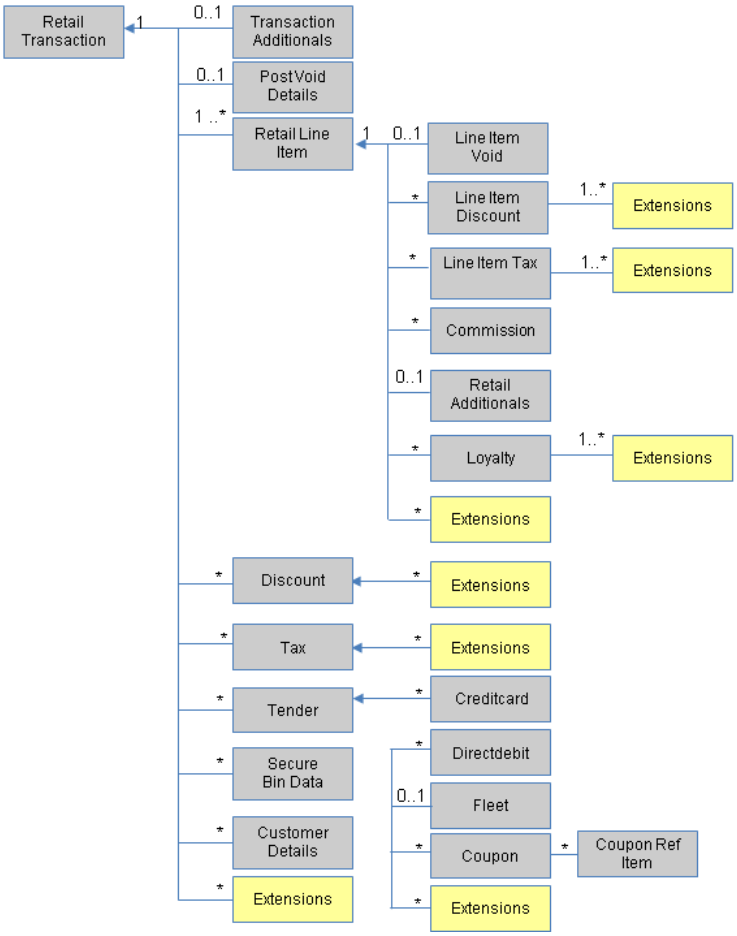


Figure 11: Extension Level Details

Extensions and the Physical Data Storage

By default, customer extensions are carried through and stored in the `/POSDW/TLOGF` table as a name-value pair, but using dedicated extension record qualifiers.

For example, if a transaction header includes the cashier's comment for the transaction, a record (with a record qualifier 25) is inserted in the `/POSDW/TLOGF` table, and this record includes the extensions information as a name-value pair. `FIELDGROUP` can be set to `COMNT` (comments), `FIELDNAME` to `CASHIER` (another value could be `MANAGER`) and `FIELDVALUE` can store the comment, for example, "Customer was happy about sale on jeans".

In the /POSDW/TLOGF table, you would see the following:

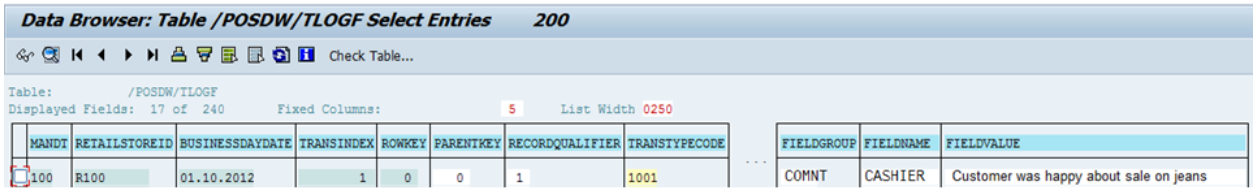


Figure 12: Example in /POSDW/TLOGF table

Storing Extension Segments in a Separate Table

If you have a large number of extensions, they can significantly increase the size of the `/POSDW/TLOGF` table, and potentially slow down database operations on the table.

To speed up database operations on the `/POSDW/TLOGF` table, you can store extension segments in a dedicated table (`/POSDW/TLOGF_EXT`) by enabling the *Store Extensions in Separate Table* option in the *Define General Settings* Customizing activity.

The setting of the *Store Extensions in Separate Table* option affects how POS transaction data is stored in the database. This option should be set after consultation with a SAP Customer Activity Repository administrator, and you should not change the selected setting of the *Store Extensions in Separate Table* option needlessly.

Only transactions processed after the *Store Extensions in Separate Table* option is enabled will have their extension segments stored in the `/POSDW/TLOGF_EXT` table. For all the POS transactions already stored in the `/POSDW/TLOGF` table, you must run the **Transfer POS Transaction Extension Segments Report** (transaction `/POSDW/REFE`) to move the extension segments from the `/POSDW/TLOGF` table to the `/POSDW/TLOGF_EXT` table.

If you have been storing extension segments in the `/POSDW/TLOGF_EXT` table, you can use the **Transfer POS Transaction Extension Segments Report** to move the extension segments back to the `/POSDW/TLOGF` table.

Note that the actual persistence location of extension segments (/POSDW/TLOGF or /POSDW/TLOGF_EXT) has no impact on the inclusion of these extension segments in their corresponding transaction records during task processing, display in the POS Workbench or analysis.

Mapping Extension Segments

If you have a large number of extensions, they can significantly increase the size of the /POSDW/TLOGF and/or the /POSDW/TLOGF_EXT tables, and potentially slow down database operations on the tables. Additionally, if you would like to consume extension data for analytical purposes, the standard storage of extensions may not yield adequate performance for the retrieval of this type of information.

To optimize the storage of extension segments, you can define how a given name-value pair for a specific store extension segment should be mapped instead into a new dedicated field within either the /POSDW/TLOGF or /POSDW/TLOGF_X tables by providing this criteria in the *Maintain TLOGF Customer Enhancement Field Mapping* Customizing activity. The new dedicated fields are defined using an APPEND structure on the relevant targeted table (/POSDW/TLOGF or /POSDW/TLOGF_X).

The definition of extension field mapping criteria in the *Maintain TLOGF Customer Enhancement Field Mapping* customizing activity affects how POS transaction data is stored in the database. This option should be set after consultation with a SAP Customer Activity Repository administrator. You should not change the defined criteria of the *Maintain TLOGF Customer Enhancement Field Mapping* Customizing activity without taking proper precautions, since any changes can have potentially negative impacts.

Only transactions processed after the definition of the field mapping criteria in the *Maintain TLOGF Customer Enhancement Field Mapping* Customizing activity will have their extension segments stored in the /POSDW/TLOGF or /POSDW/TLOGF_X table. For all the POS transactions already stored in the /POSDW/TLOGF & /POSDW/TLOGF_EXT tables, you must run the *Transfer POS Transaction Extension Segments* report (transaction /POSDW/REFE) to move the extension segments from the /POSDW/TLOGF or /POSDW/TLOGF_EXT table to the proper targeted field of the targeted table (either the /POSDW/TLOGF or /POSDW/TLOGF_X table).

If you have been previously mapping extension segments in the /POSDW/TLOGF and/or /POSDW/TLOGF_X tables and you wish to make a change or undo this mapping, you can use the *Transfer POS Transaction Extension Segments* report to move the extension segments back to the regular name-value pair storage in the /POSDW/TLOGF or /POSDW/TLOGF_EXT table.

> **Note**
>
> The actual persistence location of extension segments (/POSDW/TLOGF, /POSDW/TLOGF_EXT, or /POSDW/TLOGF_X) has no impact on the inclusion of these extension segments in their corresponding transaction records during task processing, display in the POS Workbench or analysis.

9.2 TLOG API

The following function modules are used to perform standard CRUD operations on the `/POSDW/TLOGF` table:

- `/POSDW/READ_TLOG`
- `/POSDW/WRITE_TLOG`
- `/POSDW/SEARCH_TLOG`

These function modules are part of the `/POSDW/TLOG_API` function groups that reside in *`/POSDW/STRUC`* > *`/POSDW/PIPE`* > *`/POSDW/DATABASE`* .

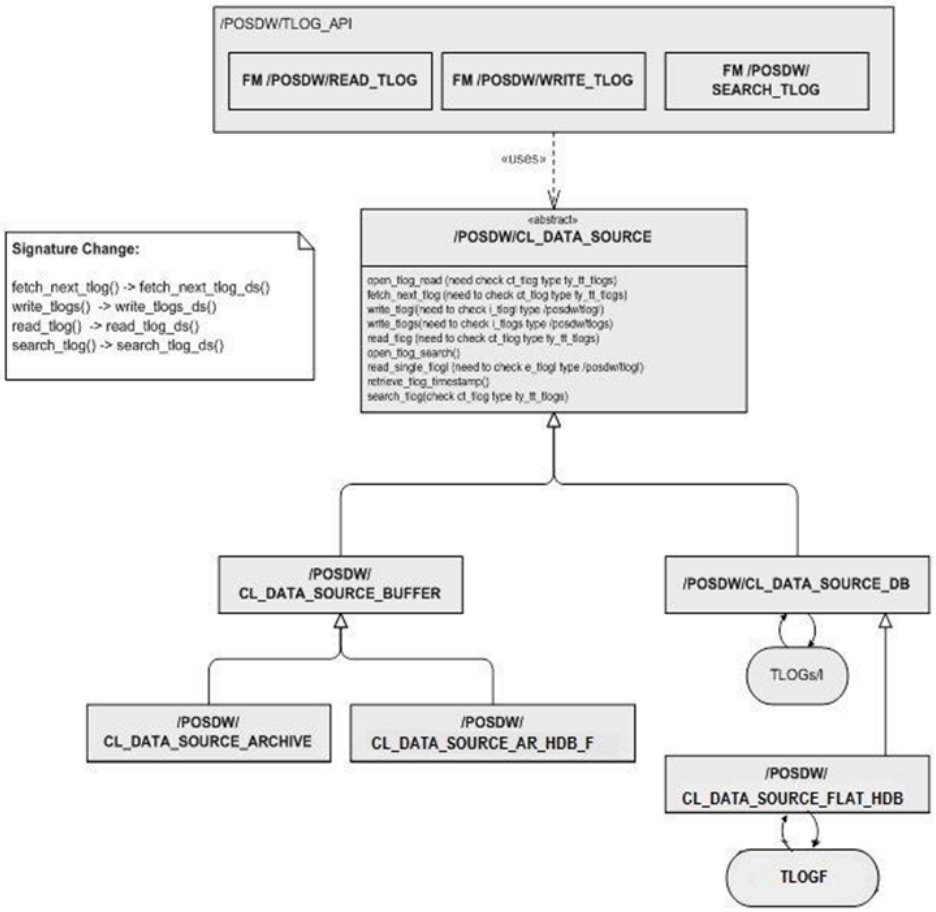


Figure 13: Structure of TLOG_API

The following APIs are used to perform standard CRUD operations on the `/POSDW/TLOGF` table:

Table 27: APIs used for the /POSDW/TLOGF Table

Name	Type	Description
/POSDW/READ_TLOG	Function Module	This function module reads the POS transactions from the POS transaction database.

Name	Type	Description
/POSDW/SEARCH_TLOG	Function Module	This function module searches the POS transaction database for records matching the selection criteria.
/POSDW/WRITE_TLOG	Function Module	This function module writes the POS transactions to the POS transaction database. Existing records with the same key are overwritten.
/POSDW/CL_DATA_SOURCE_FLAT_HDB	Class	Represents the Data Access Object used to perform basic table CRUD operations.

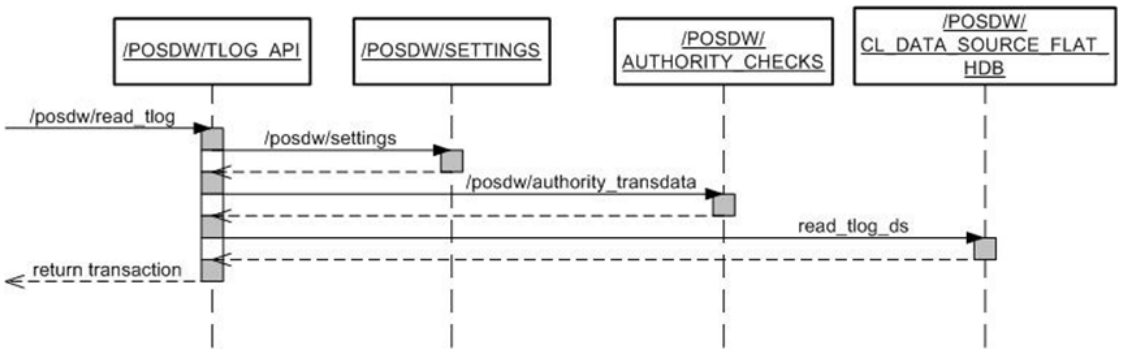


Figure 14: Sequence Diagram for /POSDW/READ_TLOG Operation

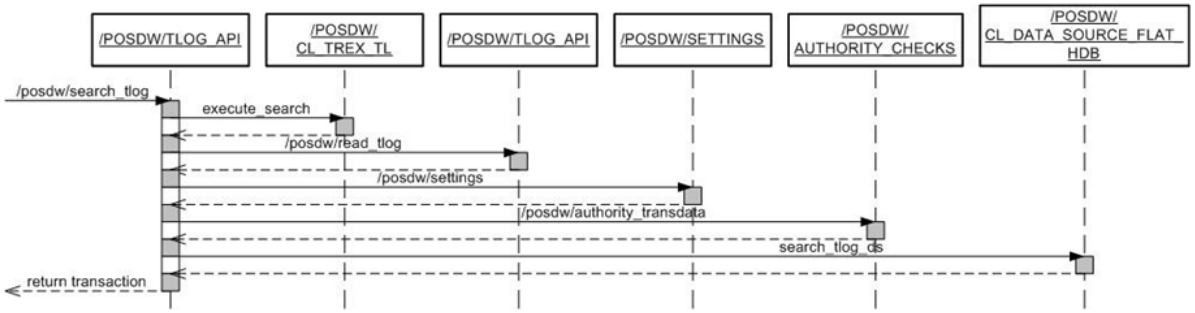


Figure 15: Sequence Diagram for POSDW/SEARCH_TLOG Operation

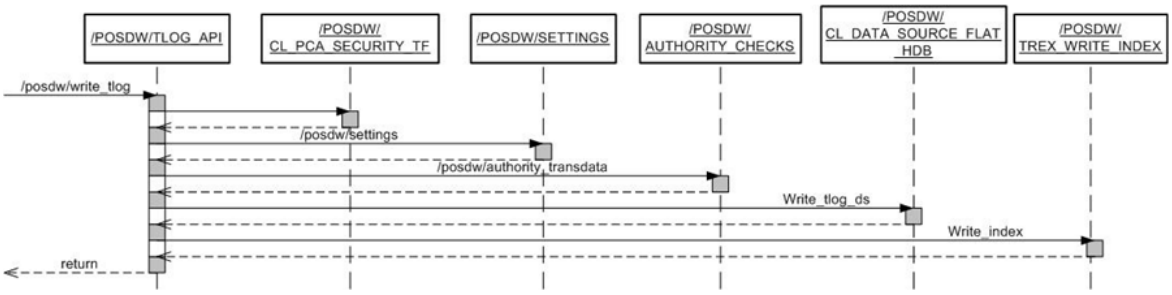


Figure 16: Sequence Diagram for /POSDW/WRITE_TLOG Operation

Enhanced Fields

Enhanced fields are not stored in the `/POSDW/TLOGF` table. They are populated during the transaction checks and processing.

The only exceptions to this are the `MATERIALNUMBER` and the `MERCHANDISECAT` fields at the line item level. These enhanced fields are stored in the database because they are required by consuming applications.

Analytic Fields

Additional fields were added to the `/POSDW/TLOGF` for analytic purposes and to improve the performance of the queries built on top of the new TLOG data model.

The following table provides information about the analytic fields of the /POSDW/TLOGF:

Table 28: /POSDW/TLOGF Analytic Fields

Field	Level	Purpose
TRANSCOUNTER	Header	Fixed value (1) used for counter based queries
BEGINDATE	Header	Transaction Date
BEGINTIME	Header	Transaction Begin Time
CALYEAR	Header	Transaction Year
CALMONTH	Header	Transaction Month
CALDAY	Header	Transaction Day
CALHOUR	Header	Transaction Hour
CALWEEK	Header	Transaction Week
TAXINC	Item	Amount of included taxes
TAXEXC	Item	Amount of excluded taxes
ITEMDISC	Item	Amount of item discounts
DISTDISC	Item	Amount of distributed discounts from the header level
DISTTAX	Item	Amount of distributed taxes from the header level
DISTTENDER	Item	Amount of distributed tender from the header level
DISTTAXEXC	Item	Amount of distributed excluded taxes from the header level
DISTVOID	Item	Amount of distributed voids from the header level
TASK_CANCELED	Item	Indicator for Canceled Task, distributed from the header level
RETL_ITEM_CAT	Item	Article category
RETL_ITEM_SCAT	Item	Article subcategory
RETAILDEBITFLAG	Item	Flag indicating whether the line item is of a debit type

Entity Relationships

In SAP POS Data Management component of SAP Customer Activity Repository, combined semantic keys are used as primary keys.

To ensure the uniqueness of every record, a child entity inherits its primary key from its parent. It then defines an additional field that is part of its own primary key.

Parent/child relationships are maintained using these semantic keys. Because a semantic key for a child is a combination of its parent's primary key and an extra field, the child primary key already contains its parent's primary key.

Extensibility

The extension mechanism used in SAP Customer Activity Repository is described in the Extensibility and Extensions section.

Structures

This following table provides information about the structures used in SAP Customer Activity Repository:

Table 29: Structures of SAP POS Data Management Component in SAP Customer Activity Repository

Structure Name	Component	Component Type	Description
/POSDW/HEADER_ANALYT-ICS	TRANSCOUNTER	/POSDW/CONSTCOUNTER	Header Analytics data fields
	BEGINDATE	/POSDW/BEGINDATE	
	BEGINTIME	/POSDW/BEGINTIME	
	CALYEAR	/POSDW/CALYEAR	
	CALMONTH	/POSDW/CALMONTH	
	CALDAY	/POSDW/CALDAY	
	CALHOUR	/POSDW/CALHOUR	
	CALWEEK	/POSDW/CALWEEK	
/POSDW/ITEM_ANALYTICS	TAXINC	/POSDW/TAXAMOUNT	Header Analytics data fields
	ITEMDISC	/POSDW/REDUCTIONA-MOUNT	
/POSDW/ITEM_DIST	DISTDISC	/POSDW/DISTDISC	Item Distributed data fields

Structure Name	Component	Component Type	Description
	DISTTAX	/POSDW/DISTTAX	
	DISTTENDER	/POSDW/DISTTENDER	
/POSDW/ITEM_DISTRIB-UTED	.INCLUDE	/POSDW/RETAILLINEI-TEM_FK	Item line item with distribu-tion fields
	.INCLUDE	/POSDW/ITEM_DIST	

Table Types

The following table types are used in the SAP POS Data Management component of SAP Customer Activity Repository.

Table 30: Table Types of SAP POS Data Management Component in SAP Customer Activity Repository

Name	Line Type	Description
/POSDW/TT_TLOGF	/POSDW/TLOGF	/POSDW/TLOGF table type
/POSDW/TT_TLOGF_EXT	/POSDW/TLOGF_EXT	/POSDW/TLOGF_EXT table type
/POSDW/TT_TLOGF_X	/POSDW/TLOGF_X	/POSDW/TLOGF_X table type
/POSDW/TT_TLOGF_CONTROL	/POSDW/TLOGF_CONTROL	Table type for control analytics
/POSDW/TT_ITEM_DISTRIBUTED	/POSDW/ITEM_DISTRIBUTED	Table of item distributed fields
/POSDW/TT_CUSTOMIZING_BUFFER	/POSDW/CUSTOMIZING_BUFFER	Customizing buffer table type

10 The Main SAP Documentation Types

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

Cross-Phase Documentation

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

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

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

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

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

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

Implementation

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

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

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

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

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

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

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

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

Production Operation

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

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

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

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

Upgrade

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

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

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

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

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

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

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