Administration Guide

SAP® POS DM 1.0 SP09

Target Audience

- Consultants
- Administrators
- Others

Public
Document version 1.06 – 06/06/2017

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Typographic Conventions

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

Icons

Icon	Meaning
	Caution
	Example
	Note
	Recommendation
	Syntax

Additional icons are used in SAP Library documentation to help you identify different types of information at a glance. For more information, see Help on Help → General Information Classes and Information Classes for Business Information Warehouse on the first page of any version of SAP Library.

Contents

1 Getting Started

SAP® POS Data Management (SAP POS DM) software improves decision making at all levels by gathering facts and figures from your retail outlets and making them available throughout your enterprise. The SAP POS DM application is comprised of the following integral parts:

- POS Inbound Processing Engine (PIPE): The engine used to collect and process Point of Sale transactions posted from individual stores.
- Analytics: Analysis tools allowing you to evaluate transactional data processed by PIPE, which include the following:
    - POS Analytics
    - Trade Foundation Analytics

Previously, SAP POS Data Management functionality was integrated directly with SAP® Business Intelligence (SAP® BI) software. As of the previous release, POS Inbound Processing Engine (PIPE) is shipped separately from SAP NetWeaver BI Content, in its own software component (`RTLPOSDM100`). Processes, such as master data checking and posting aggregated transactions to SAP BW, are executed through indirect calls.

Furthermore, SAP POS DM 1.0 SP01 (and higher) can be installed on SAP NetWeaver BW powered by SAP HANA®. As of this release, you can choose to implement SAP POS DM on SAP NetWeaver BW with a traditional database or with the SAP HANA database. SAP POS DM 1.0 powered by SAP HANA uses a new TLOG data model (`/POSDW/TLOGF`). This data model is described in Appendix A, Transaction Log (TLOG) Data Model and Storage.

Customers who implement SAP POS DM on SAP NetWeaver BW powered by SAP HANA can also take advantage of the POS In-Memory Analytics content available for SAP POS DM.

1.1POS Inbound Processing Engine (PIPE)

The POS Inbound Processing Engine (PIPE) is used to receive and process transactional data from your stores, including:

- Sales and returns including related tax data and discount information
- Means of payment data
- Financial transactions
- Goods movements
- Totals records and cashier statistics

PIPE supports trickle polling, which gives you a near-real time overview of everyday activities. Using PIPE reduces strain on other systems, such as merchandise management, that often work through the night processing mission-critical data.

Once the transaction data is in PIPE, further processing can take place, such as:

- Verification and correction of transferred POS transaction data by sales auditors
- Aggregation of POS transaction data to reduce data volume
- Supply of POS transaction data to follow-on systems (for example, SAP BW, SAP Retail or SAP F&R) for further processing

For more information on PIPE, refer to the SAP POS DM application help located at https://help.sap.com/viewer/p/SAP_POS_DATA_MANAGEMENT → *Application Help*.

1.2POS Analytics

The Business Content for POS Analytics provides standardized reports at the click of a mouse through a Web-based user interface, enabling managers to access, explore, and analyze incoming sales information.

The POS Analytics reports are executed on the transactional data posted to the SAP BW by PIPE and cover the following areas:

- Store/Article Analytics
- Cashier Analytics

For more information on POS Analytics, refer to the SAP BI Content application help located at *http://help.sap.com/bicontent* → *Application help* → *BI Content* → *Industry Solutions* → *Trading Industries* → *Retail Trade* → *Store Analytics* → *POS Data Management* → *POS Analytics*.

1.3Trade Foundation Analytics

The Business Content for Trade Foundation analytics also includes reports that allow you to analyze transactional data supplied by the POS Inbound Processing Engine.

For more information on Trade Foundation Analytics, refer to the SAP BI Content application help located at *https://help.sap.com/viewer/p/BI_CONTENT* → *Select version* → *Application Help* → *SAP Library* → *BI Content* → *Industry Solutions* → *Trading Industries* → *Trade Foundation*.

1.4POS In-Memory Analytics Content

If you are implementing SAP POS DM on SAP NetWeaver BW powered by SAP HANA, you can now analyze your stores' performance using the POS In-Memory Analytics content.

The POS In-Memory Analytics content consists of SAP POS DM HANA Content and internal BI Content, allowing you to query uncompressed, real-time POS transaction data stored in the SAP HANA database.

For more information on the SAP POS DM HANA Content and internal BI Content, refer to the SAP POS DM application help located at *https://help.sap.com/viewer/p/SAP_POS_DATA_MANAGEMENT* → *Application Help*. For information on downloading SAP POS DM HANA Content, see SAP Note 1720277.

1.5 About this Document

1.5.1 Purpose

This Administrator Guide is the central source of information for the technical and cross-scenario implementation of SAP POS DM based on one of the following versions of SAP NetWeaver BI Content:

- SAP NetWeaver 7.0X BI Content 7.07
- SAP NetWeaver 7.30 BI Content 7.37
- SAP NetWeaver 7.31 BI Content 7.47

The Administrator Guide provides an overview of SAP POS DM and its software units from a technical perspective. It is a planning tool that is intended to help you in designing your system landscape and refers you to the location of the detailed documentation that is required, mainly:

- Installation guides for related software units
- SAP Notes
- Configuration documentation
- SAP Library documentation

This Administrator Guide provides you with a single source for the information needed to install and operate SAP POS DM. This document provides the following types of information:

- Technical Implementation Information

  This section provides you with the most important information regarding the implementation of SAP POS DM, including an overview of the related planning information, its software units, the system landscape and the overall implementation sequence.

- Business Scenario Information

  This section provides an overview of the Business Scenarios that include SAP POS DM in one or more of their Business Processes.

- Installation Information

  This section provides an overview of the installation components and the sequence in which they are installed, as described in detail in SAP Note 1683825 Installation RTLPOSDM 100.

- Upgrade and Migration Information

  This section provides an overview of the process to upgrade your existing installation of POS Data Management (integrated in BI Content) to the following:

  - Latest support package of SAP POS DM 1.0 on SAP NetWeaver BW with a traditional database, or
  - Latest support package of SAP POS DM 1.0 on SAP NetWeaver BW powered by SAP HANA.
  - It also provides information on upgrading to the latest support package of SAP POS DM 1.0.

- Security Information

  This section provides the information required to operate SAP POS DM securely.

- Operations Information

  This section provides the most relevant information required for the operation of SAP POS DM.

1.5.2 Constraints/Limitations

This Administrator Guide does not provide information on the following:

- Installation or configuration of SAP NetWeaver
- Installation or configuration of SAP NetWeaver BI Content
- Installation, configuration or integration with any of the SAP Business Suite components
- Installation or configuration of an SAP HANA database
- Migration of existing data from a traditional database to an SAP HANA database

Refer to the section Before you Start for links to the corresponding documentation.

Furthermore, this Administrator Guide describes the overall technical implementation of SAP POS DM, rather than its subordinate components. This means that additional software dependencies might exist without being mentioned explicitly in this document. You can find more information on component-specific software dependencies in the corresponding installation guides; for more information, see section *Overall Implementation Sequence*.

1.6 Before You Start

The following sections provide information about:

- Important SAP Notes
- Information Available on SAP Service Marketplace
- Other useful links

1.6.1 Important SAP Notes

Before you implement SAP POS DM, read the following SAP Notes. They contain the most recent information on the installation, upgrade, security and operation of your SAP application.

Ensure that you have the latest version of each SAP Note. You can find the SAP Notes at the SAP Service Marketplace at **`service.sap.com/notes`**.

SAP Note Number	Title	Description
1766578	Data Migration Tool to migrate TLogs from TLOGS to TLOGF	Contains information on migrating transactional data contained in the **`/POSDW/TLOGS`** or **`/POSDW/TLOGL`** tables (generated using previous installations of SAP POS DM) to the **`/POSDW/TLOGF`** table of SAP POS DM 1.0 installed on SAP NetWeaver BW powered by SAP HANA.
1719282	SAP POS DM 1.0 Partitioning Information	Contains information on partitioning of the `/POSDW/TLOGF` table.
1678780	Installation/Upgrade BI_CONT/ BI_CONT_XT 7x7	Contains information on installing or upgrading to the most recent version of SAP NetWeaver BI Content.
1683825	Installation RTLPOSDM_100	Contains information on installing SAP POS DM 1.0.
1683826	Upgrading to RTLPOSDM_100	Contains information on upgrading to the latest support package of SAP POS DM 1.0.
1714365	Remote TREX indexing support for POS DM on HANA	Contains information on enabling TREX features for SAP POS DM implemented on SAP NetWeaver BW powered by SAP HANA. To implement SAP Note 1714365, you must ensure that your version of SAP NetWeaver is at least: • SAP NetWeaver 7.3 SPS 08, or • SPS 04 of enhancement package 1 for SAP NetWeaver 7.3

SAP Note Number	Title	Description
158623	SAP HANA 1.0: Security	Contains information and links to other notes related to the secure operation of SAP HANA.
1720277	POS DM 1.0 HANA Content Deployment	Contains information and attachment for installing the SAP POS DM HANA Content.
1151936	Key replacement for encryption of payment card data	Contains information about functions for a periodic key replacement for the encryption of payment card data.
1053296	Credit card encryption in the POS Data Management	Contains information on using credit card encryption and SAP POS DM.
1041514	Credit card coding in ERP POS inbound	Contains information on adjustments for the coding of credit card information in POS inbound.
1032588	Secure handling of credit card data in ERP	Contains information on enabling secure handing of credit card data in ERP.
1521141	`/POSDW/DELE` deletes from table TLOG irrespective of the Task Status	Contains information on deleting individual POS transactions.
813537	Archiving of POS DM Data	Contains general notes about archiving SAP POS DM data.
891024	Poor performance of POS Workbench when you load POS data repeatedly	Contains performance-related tips related to trickle-feed processing of POS data.
980272	Implementing tasks for two-step processing	Contains general notes about two-step processing.
813537	General notes about archiving POS data	Contains details on /POSDW/TL Customizing.
625081	Archiving objects and namespace	Contains details on archiving objects with prefixes.
1514967	SAP HANA: Central Note	Contains the latest updates and newest information about SAP HANA.

1.6.2 Information Available in SAP Service Marketplace

Information on the following areas is available in the SAP Service Marketplace.

Description	Internet Address
SAP Notes	http://support.sap.com/notes
Released platforms	http://service.sap.com/platforms
System sizing	http://service.sap.com/sizing
SAP Solution Manager	http://support.sap.com/solutionmanager
Security	http://service.sap.com/security

1.6.3 Further Useful Links

The following table lists further useful links.

SAP POS DM Application Help	*http://help.sap.com/posdm → Application Help*
SAP POS DM POS Transaction Data Migration Guide	*http://service.sap.com/instguides → Industry Solutions → Industry Solution Guides → SAP for Retail → SAP POS Data Management*.
POS Analytics Application Help	*http://help.sap.com/bicontent → Application Help → BI Content → Industry Solutions → Trading Industries → Retail Trade → Store Analytics → POS Data Management → POS Analytics*
SAP NetWeaver	*http://sdn.sap.com/irj/sdn/netweaver*
SAP HANA	*http://help.sap.com/hana/*
Using the SAP HANA Database	*http://help.sap.com/nw73 → Application Help → SAP Library → SAP NetWeaver Library: Function-Oriented View → Business Warehouse → Using the SAP HANA Database*
SAP NetWeaver BW Security Guide	*http://help.sap.com/hana → Applications Powered by SAP HANA → SAP NetWeaver Business Warehouse 7.3 → Security Information → SAP NetWeaver BW Security Guide*
SAP HANA Security Guide	*http://help.sap.com/hana → SAP HANA Appliance → Security Information → SAP HANA Security Guides → SAP HANA Security Guide (Including SAP HANA Database Security)*

2 Technical Implementation

2.1 Software Component Matrix

This section provides an overview of the business scenarios that include SAP POS DM and specifies which software units are used.

This Administrator Guide provides just one way to implement each business scenario. For other ways to implement business scenarios, see the Scenario & Process Component List in SAP Service Marketplace at **`http://service.sap.com/scl`**. The Scenario & Process Component List helps you to find realization alternatives for SAP solutions, business scenarios and processes. It shows you which application components are needed to realize a business scenario or process.

Software Component Matrix

Software Units X-Mandatory, (X)-Optional	**Version**			**Business Scenario / Process**	
				Store Connectivity / Data Upload	**Store Analytics / POS Data Analytics**
SAP NW BW	SAP_BASIS 700 SAP_ABA 700 PI_BASIS 2005_1_700 SAP_BW 700	SAP_BASIS 730 SAP_ABA 730 PI_BASIS 730 ST-PI 2008_1_710 SAP_BW 730	SAP_BASIS 731 SAP_ABA 731 PI_BASIS 731 ST-PI 2008_1_710 SAP_BW 731	X	X
SAP NW BI Content	BI CONT 7.07	BI CONT 7.37	BI CONT 7.47	X	X
SAP POS DM 1.0	RTLPOSDM 100_707	RTLPOSDM 100_730	RTLPOSDM 100_731	X	X
SAP NW PI	SAP NetWeaver PI/XI 7.1 EHP1			(X)	(X)
SAP XI Content	XI CONTENT RTLPOSDM 100_700	XI CONTENT RTLPOSDM 100_730	XI CONTENT RTLPOSDM 100_731	(X)	(X)
POS Application				X	X
SAP ERP	SAP ERP 6.0 Enhancement Package 5			(X)	(X)
SAP DMF/PMR	SAP Promotion Management for Retail 7.1 SP1			(X)	(X)
SAP F&R				(X)	(X)
SAP CRM				(X)	(X)
SAP SOL MAN	SAP Solution Manager 7.1 Support Package 01			(X)	(X)
SAP HANA				(X)	(X)

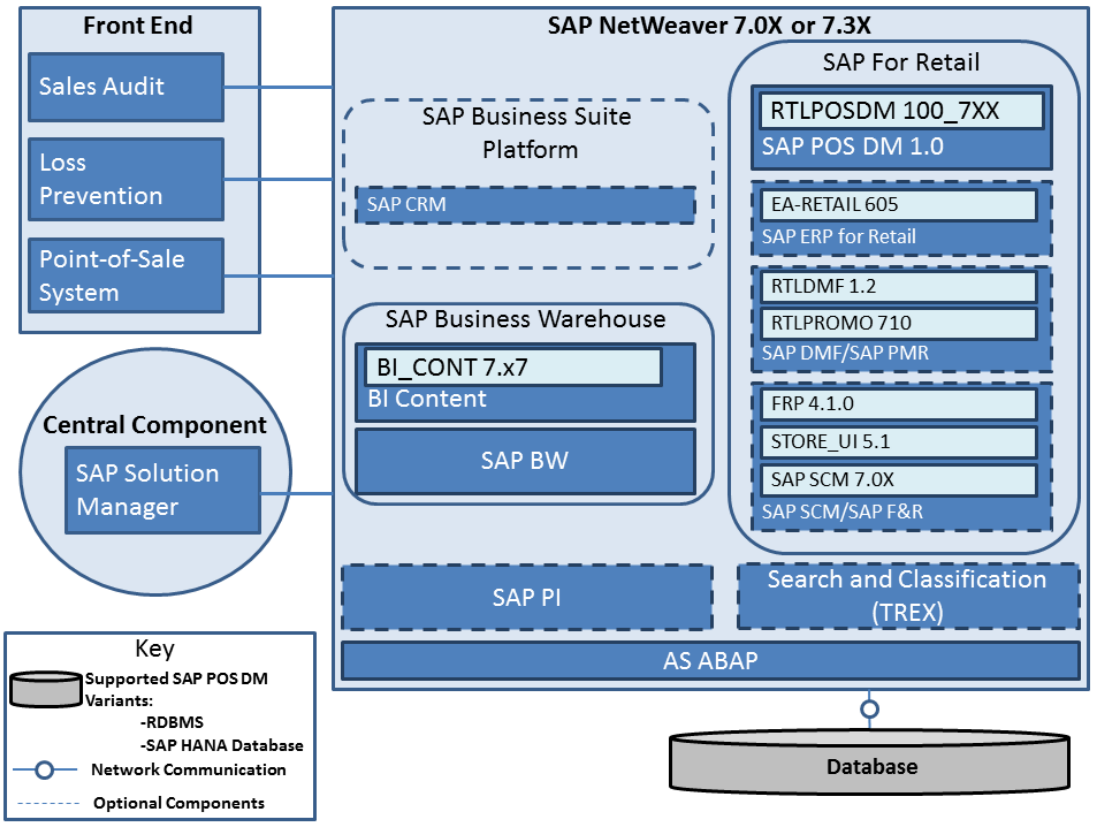
2.2System Landscape

The following diagram displays a minimal SAP POS DM 1.0 system landscape where all required SAP NetWeaver installable software units (Product & Production Management System [PPMS] instances) run in a single SAP System.

The distribution of software components to hosts is not depicted in the diagram, as the distribution is unique for each customer setup. The number of hosts depends on various factors, such as sizing, high availability or security requirements.

SAP POS DM is an Add-On component to SAP NetWeaver and requires the installation and activation of the BI Content software component. For a description of installable component options for SAP NetWeaver, refer to the SAP NetWeaver Master Guide.

Optional components are displayed but are not required for core SAP POS DM functionality. For further information on these components, refer to their respective master guides or installation guides. Component variants are shown in the Key of the diagram.



We strongly recommend that you use a minimal system landscape for test and demo purposes only. For performance, scalability, high availability and security reasons, do not use a minimal system landscape as your production landscape.

2.3 Overall Implementation Sequence

2.3.1 Purpose

The table below describes the overall installation sequence required to implement the following scenarios:

- Store Connectivity Business Scenario, specifically the **Data Upload with POS Data Management** business process.
- Store Analytics Business Scenario, specifically the **POS Data Analytics** business process.

You only need a subset of available software units to implement a specific scenario. Some software is only required for special processes. For information about which software is required to implement a specific scenario, see the Software Component Matrix.

2.3.2 Process

Implementation Sequence

Step	Action [Required Documentation]	Remarks/Subsequent Steps
1	Installation of SAP HANA SAP HANA Installation Guide http://service.sap.com/hana	This installation includes the installation of both the SAP HANA Appliance Software and of the SAP HANA Database.
2	Installation of SAP NetWeaver BW • SAP NetWeaver 7.0X: *http://help.sap.com/nw70/ → Installation and Upgrade Information → Installation - SAP NetWeaver Systems → SAP NetWeaver Installation Guide for your particular database type and operating system* • SAP NetWeaver 7.30 on traditional database: *http://help.sap.com/nw73 → Installation and Upgrade Information → Installation - SAP NetWeaver 7.3 Systems → Installation Guides - SAP NetWeaver 7.3 → SAP NetWeaver Installation Guide for your particular database type and operating system* • SAP NetWeaver 7.30, powered by SAP HANA: *http://help.sap.com/nw73 → Installation and Upgrade Information → Installation - SAP NetWeaver 7.3 Systems → Installation Guides - SAP NetWeaver 7.3 → SAP HANA Database → SAP NetWeaver Installation Guide for your particular operating system* • SAP NetWeaver 7.31 on traditional database: *http://help.sap.com/nw731/* under Installation and Upgrade Information • SAP NetWeaver 7.31, powered by SAP HANA:	

Step	Action [Required Documentation]	Remarks/Subsequent Steps
	http://help.sap.com/nw73bwhana under Installation and Upgrade Information	
3	Installation of SAP NetWeaver BI Content 7.07, 7.37 or 7.47 Installation/Upgrade SAP Note 1678780	
4	Installation of SAP POS DM 1.0 Installation section of this guide	
5	Installation of SAP POS DM HANA Content. SAP Note 1720277	
6	Installation of SAP Solution Manager 7.1 Support Package 01 Installation Guide SAP Solution Manager 7.1: version specific to your landscape service.sap.com/support → *Release & Upgrade Info* → *Installation & Upgrade Guides* → *SAP Components* → *SAP Solution Manager* → *Release 7.1*	
7	Installation of SAP ERP 6.0 Enhancement Package 5 http://help.sap.com/erp605 → *Installation and Upgrade Information* → *SAP ERP 6.0 Enhancement Package 5 Installation Guide* for your particular database type and operating system	
8	Installation of a Point-of-Sale solution. Refer to the installation information accompanying your POS solution.	
9	Installation of SAP NetWeaver Process Integration (PI) 7.1 EHP 1 http://help.sap.com/nwpi → *Installation and Upgrade Information* → *SAP NetWeaver Process Integration 7.1 Installation Guide* for your particular database type and operating system.	
10	Installation of SAP XI Retail POS Content (XI CONTENT RTLPOSDM 100_7XX) http://help.sap.com/nw_platform → *Application Help* → *Function-Oriented View* → *Your Language* → *Process Integration* → *Enterprise Services Repository & Registry* → *Managing Services in the Enterprise Service Repository* → *Managing Enterprise Services Delivered by SAP* → *Importing ESR Content*. Also see, *SAP Configuration Guide for POS Integration* located at http://service.sap.com/retail → *Expert Knowledge Corner* → *Interfaces* → *POS Integration* → *StorConnec* → *SAP POS Integ. Config. Guide - SAP ERP 6.0 EhP5 & SAP POS2.*	

Step	Action [Required Documentation]	Remarks/Subsequent Steps
11	Installation of SAP DFM/PMR SAP Demand Management Installation Guide *service.sap.com/instguides → Industry Solutions → Industry Solution Guides → SAP for Retail → SAP Demand Management*	
12	Installation of SAP PMR Installation Guide - SAP Promotion Management for Retail *service.sap.com/instguides → Industry Solutions → Industry Solution Guides → SAP for Retail → SAP Promotion Management for Retail*	
13	Installation of SAP EHP 2 for SAP CRM 7.0 *service.sap.com/instguides → SAP Business Suite Applications → SAP CRM → SAP EHP2 for SAP CRM 7.0 → Install →* Installation Guide for your particular database type and operating system	
14	Installation of SAP Forecasting & Replenishment (SAP F&R) *SAP Service Marketplace → Installation & Upgrade Guides → SAP Business Suite Applications → SAP SCM → SAP SCM Server → Using SAP SCM 7.0 Server → Installation Guides →* Select the installation guide for your platform.	

3 Business Scenarios using SAP POS DM

SAP POS DM 1.0 is an essential component of the following SAP for Retail Business Scenarios:

- Store Connectivity
- Store Analytics

3.1 Store Connectivity Business Scenario

3.1.1 Overview

You can use the Store Connectivity Business Scenario to connect to and integrate Point-of-Sale (POS) systems to the SAP for Retail merchandise applications. The SAP POS DM application is required for the *Data Upload with POS Data Management* business process.

The SAP POS DM application is comprised of two integral parts: PIPE and Analytics. Note that the *Data Upload with POS Data Management* business process uses PIPE only.

Transactional data originating from a POS system is processed by PIPE in the following ways:

- POS transaction data is received and stored in a central transaction log
- Transaction data is validated against the master data in the SAP NetWeaver Business Warehouse (BW) system
- Transaction data is made available for the Sales Audit
- Transaction data is ready to be processed through tasks. Tasks are independent processing steps that can be executed for the transaction data. SAP delivers SAP POS DM with the following standard tasks:
    - Supply BI Immediately, Non-Aggregated, without Distribution
    - Supply BI, with Distribution
    - Supply the Old POS Content in BI
    - Supply BI, with Loyalty Points
    - Generate WPUBON IDoc
    - Generate WPUWBW IDoc
    - Generate WPUFIB IDoc
    - Generate WPUTAB IDoc
    - Generate WPUUMS IDoc
    - Credit Card Settlement
    - Confirmation of Credit Card Settlement

- Supply SAP ERP Inventory Management
- Supply SAP Forecasting & Replenishment
- Supply DMF-Based Applications
- Oil & Gas SSR Payment Card Data Processing
- Sales Audit Performed, Manual Task
- Check Balancing for Totals Transactions
- Check for Duplicate Transaction Numbers
- Check for Receipt Numbers Without Gaps
- Perform Transaction Reversal
- Perform Calculations for Short/Over Balancing
- Send Short/Overs to ERP
- Provision Suspicious Transactions to LPA
- Aggregate Transaction Data by:
- Material/Stock
- Material/Stock with Taxes and Discounts
- Register/Cashier/Department/Tender
- Means of Payment
- Material and Offer (DMF-Based Applications)

When SAP POS DM is implemented on SAP NetWeaver BW powered by SAP HANA, the following standard tasks are also applicable:

- Aggregate Transaction Data for Analytics
- Supply Analytics Content with Distributed Transaction Data
- Updating Data Status for Analytics

Using these tasks will not produce any results if SAP POS DM is implemented on a traditional database.

You can activate and deactivate tasks in Customizing. The open task concept allows you to integrate your own tasks in to the applications as BAdI implementations. A POS transaction receives an explicit status for each relevant task. This makes it possible to process individual tasks flexibly and independently. You can give priority to particularly time-critical tasks for the relevant transaction, without having to consider any other tasks. You can also reduce the transaction volume within a task by setting a suitable aggregation method according to task-

specific requirements. The task concept allows POS transactions to be prepared on time and on demand to supply subsequent business processes.

An important element of the PIPE is the POS Workbench. You can use it to execute the following functions:

- Monitor the processing status of each individual transaction for each relevant task
- Correct incorrect transaction data using mass maintenance tools
- Check for duplicate transaction numbers to prevent multiple updates of the same transaction
- Check that there are no gaps in the transaction numbers

3.1.2 Further Information

The following documents provide more information about the Store Connectivity Business Scenario:

Content	Location
Scenario Description	See the documentation in the SAP Solution Manager.
Configuration Documentation	See the documentation in the SAP Solution Manager.
Scenario Security Guide	See the documentation at the SAP Service Marketplace: **service.sap.com/securityguide**.

3.2 Store Analytics Business Scenario

3.2.1 Overview

You can use the Store Analytics business scenario to perform numerous analyses for controlling and monitoring the retailing processes in your store. SAP POS DM is a required component for the *POS Data Analytics* business process.

You can use the *POS Data Analytics* business process to evaluate sales from POS data at store and article level. In a market defined by trends in consumer demand, a retail company must react quickly to changes. The prompt analysis of POS data is crucial for dealing with these challenges.

The following InfoProviders are supplied by default:

- 0RPA_C01 - Store/Article/Day
- 0RPA_C02 - Store/Article/Week
- 0RPA_C03 - Store/Article/Month

POS Data Analytics allows you to analyze sales data, including customer-related data, in real time. POS Data Analytics primarily comprises the following:

- Analysis of customer needs and behavior (for example, customer returns/complaints)
- Efficient analysis of key figures from stores
- High data quality and performance when processing mass data using the latest technology
- Increase in profitability through real-time controlling of retail processes

3.2.2 Further Information

The following documents provide more information about Store Analytics business process:

Content	Location
Scenario Description	See the documentation in SAP Solution Manager.
Configuration Documentation	See the documentation in SAP Solution Manager.
Scenario Security Guide	See the documentation at the SAP Service Marketplace: **service.sap.com/securityguide**.

4 Installation

SAP POS DM 1.0 is an Add-On to SAP NetWeaver BW. This section describes the initial installation of SAP POS DM 1.0. If you have an existing implementation (either the POS Data Management functionality included in BI Content or SAP POS DM 1.0 SP01), read the Upgrade and POS Transaction Data Migration section of this guide.

The following table presents the prerequisites for installing the latest support package of SAP POS DM 1.0 and provides links to the respective installation documentation:

Prerequisite	Installation Information
SAP HANA (optional)*	SAP HANA Installation Guide with SAP HANA Unified Installer located at http://websmp203.sap-ag.de/hana.
SAP NetWeaver BW 7.0X, 7.30*, 7.31*	• SAP NetWeaver 7.0X: *http://help.sap.com/nw70/ → Installation and Upgrade Information → Installation - SAP NetWeaver Systems → SAP NetWeaver Installation Guide for your particular database type and operating system*. • SAP NetWeaver 7.30 on a traditional database: *http://help.sap.com/nw73 → Installation and Upgrade Information → Installation - SAP NetWeaver 7.3 Systems → Installation Guides - SAP NetWeaver 7.3 → SAP NetWeaver Installation Guide for your particular database type and operating system*. • SAP NetWeaver 7.30, powered by SAP HANA: *http://help.sap.com/nw73 → Installation and Upgrade Information → Installation - SAP NetWeaver 7.3 Systems → Installation Guides - SAP NetWeaver 7.3 → SAP HANA Database → SAP NetWeaver Installation Guide for your particular operating system*. • SAP NetWeaver 7.31 on a traditional database: *http://help.sap.com/nw731/* under Installation and Upgrade Information • SAP NetWeaver 7.3, powered by SAP HANA: *htts://help.sap.com/nw73bwhana* under Installation and Upgrade Information
SAP NetWeaver BI Content 7.07, 7.37* or 7.47*	SAP Note 1678780.
**Available on the SAP HANA database*	

Once you have ensured that all the required software components have been installed, see SAP Note 1683825 for information on installing the latest support package of the SAP POS DM 1.0 Add-On.

We strongly recommend that:
If you are installing a new system, only perform the client copy after the import of the RTLPOSDM 100_7XX software component. You should only import or transfer Customizing tables after the client copy is complete as described in SAP Note 337623.
If you are updating an existing system with the RTLPOSDM 100_7XX software component, only import or transfer Customizing tables after the client copy is complete as described in SAP Note 337623.

4.1 Post-Installation

4.1.1 SAP NetWeaver PI

If you are planning to use the SAP NetWeaver Process Integration (SAP NetWeaver PI) Content for SAP POS DM, you need to perform the following steps:

1. Locate XI CONTENT RTLPOSDM on the SAP Service Marketplace at *http://service.sap.com/swdc* → *SAP Software Download Center* → *Support Packages and Patches* → *Browse Our Download Catalog* → *SAP Content* → *ESR Content (XI Content)*.
2. Based on your SAP NetWeaver version, select the appropriate SAP NetWeaver PI Content version:
   - XI CONTENT RTLPOSDM 100_700
   - XI CONTENT RTLPOSDM 100_730
   - XI CONTENT RTLPOSDM 100_731
3. Follow the instructions for importing SAP NetWeaver PI Content as listed under *http://help.sap.com/nw_platform* → *Application Help* → *Function-Oriented View* → *Your Language* → *Process Integration* → *Enterprise Services Repository & Registry* → *Managing Services in the Enterprise Service Repository* → *Managing Enterprise Services Delivered by SAP* → *Importing ESR Content*.

For more information, see SAP Library for SAP NetWeaver Process Integration on SAP Help Portal at *http://help.sap.com/nw_platform* →*Application Help* → *SAP NetWeaver Process Integration*.

Also see, *SAP Configuration Guide for POS Integration* located at *http://service.sap.com/retail* → *Expert Knowledge Corner* → *Interfaces* → *POS Integration* → *StorConnec* → *SAP POS Integ. Config. Guide - SAP ERP 6.0 EhP5 & SAP POS2.*

4.1.2 SAP POS DM Installed on SAP NetWeaver BW Powered by SAP HANA

If you have installed SAP POS DM on SAP NetWeaver BW powered by SAP HANA, there are several post-installation steps that you may need to execute:

1. Partition the `/POSDW/TLOGF` table as described in SAP Note 1719282.
2. Adjust Customizing settings if you want to store extensions segments in a dedicated database table as described in the Extensibility and Extensions section.

If you store extension segments in the `/POSDW/TLOGF_EXT` table, this table should be partitioned in the same way as the `/POSDW/TLOGF` table, that is, following the partitioning guidelines in SAP Note 1719282.

3. To use the POS In-Memory Analytics content on your SAP HANA database, install the required SAP POS DM HANA Content. For information on installing SAP POS DM HANA Content, see SAP Note 1720277.

5 Upgrade and POS Transaction Data Migration

5.1 Upgrading your SAP NetWeaver BI Content Version

As of SAP NetWeaver BI Content 7.07 (7.37 or 7.47), POS Data Management is no longer integrated in the BI Content Add-On and must be installed as a separate SAP POS DM Add-On (`RTLPOSDM 100` software component version).

Therefore, if you are upgrading to any of the BI Content versions listed below, you must also upgrade to the latest support package of SAP POS DM 1.0.

BI Content	SAP HANA database	Read Section
BI CONT 7.07	Not Supported	5.1.1 Quick Guide for Upgrade to SAP POS DM 1.0 Installed on SAP NetWeaver BW on a Traditional Database (RDBMS)
BI CONT 7.37	Yes	5.1.2 Quick Guide for Upgrade to SAP POS DM 1.0 Installed on SAP NetWeaver BW Powered by SAP HANA
	No	5.1.1 Quick Guide for Upgrade SAP POS DM 1.0 Installed on SAP NetWeaver BW on a Traditional Database (RDBMS)
BI CONT 7.47	Yes	5.1.2 Quick Guide for Upgrade to SAP POS DM 1.0 Installed on SAP NetWeaver BW Powered by SAP HANA
	No	5.1.1 Quick Guide for Upgrade SAP POS DM 1.0 Installed on SAP NetWeaver BW on a Traditional Database (RDBMS)

5.1.1 Quick Guide for Upgrade to SAP POS DM 1.0 Installed on SAP NetWeaver BW on a Traditional Database (RDBMS)

This section includes a checklist with all the actions that you must perform. The actions are presented in the order in which you must perform them, so that you can work through them as a checklist.

Planning

✓	Activity	
	Read the upgrade information available on the SAP Service Marketplace.	
	SAP NetWeaver 7.0x BI Content 7.07	*SAP Service Marketplace → Installation & Upgrade Guides → SAP NetWeaver → SAP NetWeaver 7.0 (2004s) → Upgrade*

	SAP NetWeaver 7.30 BI Content 7.37	*SAP Service Marketplace → Installation & Upgrade Guides → SAP NetWeaver → SAP NetWeaver 7.3 → Upgrade*
	SAP NetWeaver 7.31 BI Content 7.47	*SAP Service Marketplace → Installation & Upgrade Guides → SAP NetWeaver → SAP NetWeaver 7.3 → Upgrade, read the information pertaining to SAP Enhancement Package 1 for NetWeaver 7.3.*

Preparation

✓	**Activity**	
	Perform the upgrade as described in the SAP Note listed below.	
	SAP NetWeaver 7.0x BI Content 7.07	SAP Note 1678780
	SAP NetWeaver 7.30 BI Content 7.37	SAP Note 1678780
	SAP NetWeaver 7.31 BI Content 7.47	SAP Note 1678780

Upgrade Process

✓	**Activity**
	Upgrade to the latest support package of SAP POS DM 1.0 as described in SAP Note 1683826.

We strongly recommend that:
You only transfer the Customizing tables after the client copy is complete as described in SAP Note 337623
You exclude the Customizing tables that were already in use as described in SAP Note 70290. For example, you might exclude, manually transfer, and check the following Customizing tables:

- /POSDW/BSTSK
- /POSDW/BSTSKT
- /POSDW/REASG
- /POSDW/REASGT
- /POSDW/REASON
- /POSDW/REASONT
- /POSDW/REASG
- /POSDW/REASGT

Follow-Up Activities

Once you have installed SAP POS DM 1.0, you may need to adjust your Enterprise Services as described below prior to resuming operation.

<table>
<tr><th>✓</th><th colspan="2">Activity</th></tr>
<tr><td></td><td colspan="2">Adjust Enterprise Services as follows:</td></tr>
<tr><td></td><td>Deprecated Enterprise Service</td><td>New Enterprise Service</td></tr>
<tr><td></td><td>Software Component:
ESM BI CONT 7.06

Namespace:
http://sap.com/xi/BICONTENT/Global2
• PointOfSaleTransactionERPBulkCreateRequest_In
• LoyaltyMembershipActivityJournalCRMBulkRequest_Out</td><td>Software Component:
RTLPOSDM100_700,
RTLPOSDM100_730 or
RTLPOSDM100_731

Namespace:
http://sap.com/xi/RTLPOSDM/Global2
• PointOfSaleTransactionERPBulkCreateRequest_In
• LoyaltyMembershipActivityJournalCRMBulkRequest_Out_V1</td></tr>
<tr><td></td><td>Software Component:
ESM BI CONT 7.06

Namespace:
http://sap.com/xi/BICONTENT/Global2/Testing
• PointOfSaleTransactionERPBulkCreateRequest_Out</td><td>Software Component:
RTLPOSDM100_700,
RTLPOSDM100_730 or
RTLPOSDM100_731

Namespace:
http://sap.com/xi/RTLPOSDM/Global2/Testing
• PointOfSaleTransactionERPBulkCreateRequest_Out</td></tr>
<tr><td></td><td colspan="2">If you are planning to use the SAP NetWeaver Process Integration (SAP NetWeaver PI) Content for SAP POS DM, you need to import the SAP NetWeaver PI Content as described in the SAP NetWeaver PI section.</td></tr>
</table>

5.1.2 Quick Guide for Upgrade to SAP POS DM 1.0 Installed on SAP NetWeaver BW Powered by SAP HANA

This section provides information if you are planning to use SAP POS DM 1.0 installed on SAP NetWeaver BW powered by SAP HANA. As explained more in the Appendix of this guide, when SAP POS DM 1.0 is installed on SAP NetWeaver BW powered by SAP HANA, the data model for storing POS Transaction in the HANA database is different from that used on the traditional database (RDBMS). Therefore, several additional steps, such as POS transaction data migration and database table partitioning must be executed after the upgrade.

This section includes a checklist with all the actions that you must perform. The actions are presented in the order in which you must perform them, so that you can work through them like a checklist.

Planning

✓	**Activity**	
	Read the upgrade information available on the SAP Service Marketplace.	
	SAP NetWeaver 7.30 BI Content 7.37	*SAP Service Marketplace → Installation & Upgrade Guides → SAP NetWeaver → SAP NetWeaver 7.3 → Upgrade*
	SAP NetWeaver 7.31 BI Content 7.47	*SAP Service Marketplace → Installation & Upgrade Guides → SAP NetWeaver → SAP NetWeaver 7.3 → Upgrade*, read the information pertaining to SAP Enhancement Package 1 for NetWeaver 7.3.

Preparation

✓	**Activity**	
	Migrate your existing SAP NetWeaver BW installation to an SAP HANA database as described in the End-to-End Implementation Roadmap for SAP NetWeaver BW, powered by SAP HANA Guide found under *http://help.sap.com/nw73bwhana/* → *Installation and Upgrade Information*.	
	Perform the upgrade as described in the SAP Notes listed below:	
	SAP NetWeaver 7.30 BI Content 7.37	SAP Note 1678780.
	SAP NetWeaver 7.31 BI Content 7.47	SAP Note 1678780.

Upgrade Process

✓	**Activity**
	Upgrade to the latest support package of SAP POS DM 1.0 as described in SAP Note 1683826.

We strongly recommend that:

You should only transfer the Customizing tables after the client copy is complete as described in SAP Note 337623
You should exclude the Customizing tables that were already in use as described in SAP Note 70290. For example, you might exclude, manually transfer, and check the following Customizing tables:

- /POSDW/BSTSK
- /POSDW/BSTSKT
- /POSDW/REASG
- /POSDW/REASGT
- /POSDW/REASON
- /POSDW/REASONT
- /POSDW/REASG
- /POSDW/REASGT

Follow-Up Activities

Once you have upgraded to the latest support package of SAP POS DM 1.0, there are several configurations that you must adjust to resume operation.

<table>
<tr><th>✓</th><th>Activity</th><th></th></tr>
<tr><td></td><td colspan="2">Adjust Enterprise Services as follows:</td></tr>
<tr><td></td><td>Deprecated Enterprise Service</td><td>New Enterprise Service</td></tr>
<tr><td></td><td>Software Component:
ESM BI CONT 7.06

Namespace:
http://sap.com/xi/BICONTENT/Global2
• PointOfSaleTransactionERPBulkCreateRequest_In
• LoyaltyMembershipActivityJournalCRMBulkRequest_Out</td><td>Software Component:
RTLPOSDM100_700, RTLPOSDM100_730 or RTLPOSDM100_731

Namespace:
http://sap.com/xi/RTLPOSDM/Global2
• PointOfSaleTransactionERPBulkCreateRequest_In
• LoyaltyMembershipActivityJournalCRMBulkRequest_Out_V1</td></tr>
<tr><td></td><td>Software Component:
ESM BI CONT 7.06

Namespace:
http://sap.com/xi/BICONTENT/Global2/Testing
• PointOfSaleTransactionERPBulkCreateRequest_Out</td><td>Software Component:
RTLPOSDM100_700, RTLPOSDM100_730 or RTLPOSDM100_731

Namespace:
http://sap.com/xi/RTLPOSDM/Global2/Testing
• PointOfSaleTransactionERPBulkCreateRequest_Out</td></tr>
<tr><td></td><td colspan="2">Partition the /POSDW/TLOGF table as described in SAP Note 1719282.</td></tr>
<tr><td></td><td colspan="2">Adjust Customizing settings if you want to store extensions segments in a dedicated database table as described in the Extensibility and Extensions section.
If you store extension segments in the /POSDW/TLOGF_EXT table, this table should be partitioned in the same way as the /POSDW/TLOGF table, that is, following the partitioning guidelines in SAP Note 1719282.</td></tr>
<tr><td></td><td colspan="2">Migrate POS transaction data from the /POSDW/TLOGS and /POSDW/TLOGL tables of the old BI Content installation to the /POSDW/TLOGF table in the new SAP POS DM</td></tr>
</table>

	1.0 installation. For more information, refer to the *SAP POS DM POS Transaction Data Migration Guide* located at *http://service.sap.com/instguides* → *Industry Solutions* → *Industry Solution Guides* → *SAP for Retail* → *SAP POS Data Management*.
	To use the POS In-Memory Analytics content on your SAP HANA database, install the required SAP POS DM HANA Content. For information on installing SAP POS DM HANA Content, see SAP Note 1720277.
	If you are planning to use the SAP NetWeaver Process Integration (SAP NetWeaver PI) Content for SAP POS DM, you need to import the SAP NetWeaver PI Content as described in the SAP NetWeaver PI section.

5.2 Upgrading from SAP POS DM 1.0

If you have already installed an older support package of SAP POS DM 1.0, you can upgrade to the latest support package of SAP POS DM using one of the following paths:

- Upgrade from SAP POS DM installed on SAP NetWeaver BW on a traditional database (RDBMS) to the latest support package of SAP POS DM installed on SAP NetWeaver BW on a traditional database (RDBMS)
- Upgrade from SAP POS DM installed on SAP NetWeaver BW on a traditional database (RDBMS) to the latest support package of SAP POS DM installed on SAP NetWeaver BW powered by SAP HANA
- Upgrade from SAP POS DM installed on SAP NetWeaver BW powered by SAP HANA to the latest support package of SAP POS DM installed on SAP NetWeaver BW powered by SAP HANA

The following subsections provide checklists with all the actions that you must perform for each of the upgrade paths.

5.2.1 Quick Guide for Upgrade from SAP POS DM Installed on SAP NetWeaver BW on a Traditional Database (RDBMS)

Upgrade Process

✓	**Activity**
	Upgrade to the latest support package of SAP POS DM 1.0 as described in SAP Note 1683826.

We strongly recommend that:
You only transfer the Customizing tables after the client copy is complete as described in SAP Note 337623
You exclude the Customizing tables that were already in use as described in SAP Note 70290. For example, you might exclude, manually transfer, and check the following Customizing tables:

- /POSDW/BSTSK
- /POSDW/BSTSKT
- /POSDW/REASG
- /POSDW/REASGT
- /POSDW/REASON
- /POSDW/REASONT

- /POSDW/REASG
- /POSDW/REASGT

5.2.2 Quick Guide for Upgrade from SAP POS DM Installed on SAP NetWeaver BW on a Traditional Database (RDBMS)

Preparation

✓	Activity	
	Migrate your existing SAP NetWeaver BW installation to an SAP HANA database as described in the End-to-End Implementation Roadmap for SAP NetWeaver BW, powered by SAP HANA Guide found under *http://help.sap.com/nw73bwhana/* → *Installation and Upgrade Information*.	
	If required, perform the upgrade as described in the SAP Notes listed below:	
	SAP NetWeaver 7.30 BI Content 7.37	SAP Note 1678780.
	SAP NetWeaver 7.31 BI Content 7.47	SAP Note 1678780.

Upgrade Process

✓	Activity
	Upgrade to the latest support package of SAP POS DM 1.0 as described in SAP Note 1683826.

We strongly recommend that:
You should only transfer the Customizing tables after the client copy is complete as described in SAP Note 337623
You should exclude the Customizing tables that were already in use as described in SAP Note 70290. For example, you might exclude, manually transfer, and check the following Customizing tables:

- /POSDW/BSTSK
- /POSDW/BSTSKT
- /POSDW/REASG
- /POSDW/REASGT
- /POSDW/REASON
- /POSDW/REASONT
- /POSDW/REASG
- /POSDW/REASGT

Follow-Up Activities

Once you have upgraded to the latest support package of SAP POS DM 1.0, there are several configurations that you must adjust to resume operation.

✓	Activity
	Partition the `/POSDW/TLOGF` table as described in SAP Note 1719282.
	Adjust Customizing settings if you want to store extensions segments in a dedicated database table as described in the Extensibility and Extensions section.

	If you store extension segments in the `/POSDW/TLOGF_EXT` table, this table should be partitioned in the same way as the `/POSDW/TLOGF` table, that is, following the partitioning guidelines in SAP Note 1719282.
	Migrate POS transaction data from the `/POSDW/TLOGS` and `/POSDW/TLOGL` tables of the SAP POS DM 1.0 installation to the `/POSDW/TLOGF` table in the upgraded installation. For more information, refer to the *SAP POS DM POS Transaction Data Migration Guide* located at *http://service.sap.com/instguides* → *Industry Solutions* → *Industry Solution Guides* → *SAP for Retail* → *SAP POS Data Management*.
	To use the POS In-Memory Analytics content on your SAP HANA database, install the required SAP POS DM HANA Content. For information on installing SAP POS DM HANA Content, see SAP Note 1720277.
	If required, update the version of SAP NetWeaver Process Integration (SAP NetWeaver PI) Content for SAP POS DM as described in the SAP NetWeaver PI section.

5.2.3 Quick Guide for Upgrade from SAP POS DM Installed on SAP NetWeaver BW Powered by SAP HANA

Upgrade Process

✓	**Activity**
	Upgrade to the latest support package of SAP POS DM 1.0 as described in SAP Note 1683826.

We strongly recommend that:
You should only transfer the Customizing tables after the client copy is complete as described in SAP Note 337623
You should exclude the Customizing tables that were already in use as described in SAP Note 70290. For example, you might exclude, manually transfer, and check the following Customizing tables:

- /POSDW/BSTSK
- /POSDW/BSTSKT
- /POSDW/REASG
- /POSDW/REASGT
- /POSDW/REASON
- /POSDW/REASONT
- /POSDW/REASG
- /POSDW/REASGT

Follow-Up Activities

Once you have upgraded to the latest support package of SAP POS DM 1.0, there are several configurations that you must adjust to resume operation.

✓	**Activity**	
	Partition the `/POSDW/TLOGF` table as described in SAP Note 1719282.	
	Adjust Customizing settings if you want to store extensions segments in a dedicated	

	database table as described in the Extensibility and Extensions section. If you store extension segments in the `/POSDW/TLOGF_EXT` table, this table should be partitioned in the same way as the `/POSDW/TLOGF` table, that is, following the partitioning guidelines in SAP Note 1719282.

6 SAP POS DM Security

With the increased use of distributed systems and the Internet for managing business data, the demands on security are on the rise. When using a distributed system, you must ensure that your data and your processes support your business needs, but do not allow unauthorized access to critical information. User errors, negligence or attempted manipulation of your system should not result in loss of information or processing time. These demands on security also apply to SAP POS DM. The information in this section is provided to assist you in making SAP POS DM secure.

6.1 Overview of the Subsections

The SAP POS DM Security section consists of the following subsections:

- Technical System Landscape

  This section provides an overview of the technical components and communication paths that are used by SAP POS DM.

- Security Aspects of Data, Data Flow and Processes

  This section provides an overview of the security aspects involved throughout the most widely-used processes within SAP POS DM.

- User Administration and Authentication

  This section provides an overview of the following user administration and authentication aspects:

  - Recommended tools for user management
  - User types required for SAP POS DM
  - Standard users delivered with SAP POS DM
  - Overview of the user synchronization strategy, if several components or products are involved
  - Overview of integration into Single Sign-On (SSO) environments

- Authorizations

  This section provides an overview of the authorization concept that applies to SAP POS DM.

- Network and Communication Security

  This section provides an overview of the communication paths used by SAP POS DM and the security mechanisms that apply. It also includes our recommendations for the network topology to restrict access at the network level.

- Internet Communication Framework Security

  This section provides an overview of the Internet Communication Framework (ICF) services used by SAP POS DM.

- Enterprise Services Security

  This section provides an overview of the security aspects that apply to the enterprise services delivered with SAP POS DM.

- Payment Card Security According to PCI-DSS

This section provides an overview of the implementation of payment card security to ensure compliance with the Payment Card Industry Data Security Standard (PCI-DSS).

- Services for Security Lifecycle Management

  This section provides an overview of services provided by Active Global Support that are available to assist you in maintaining security in your SAP systems on an ongoing basis.

- Security-Relevant Logging and Tracing

  This section provides an overview of the trace and log files that contain security-relevant information, for example, so you can reproduce activities if a security breach occurs.

6.2 Fundamental Security Guides

SAP POS DM is based on the SAP NetWeaver Application Server ABAP and can be implemented on SAP NetWeaver BW powered by SAP HANA. Therefore, the corresponding Security Guides apply to the SAP POS DM application.

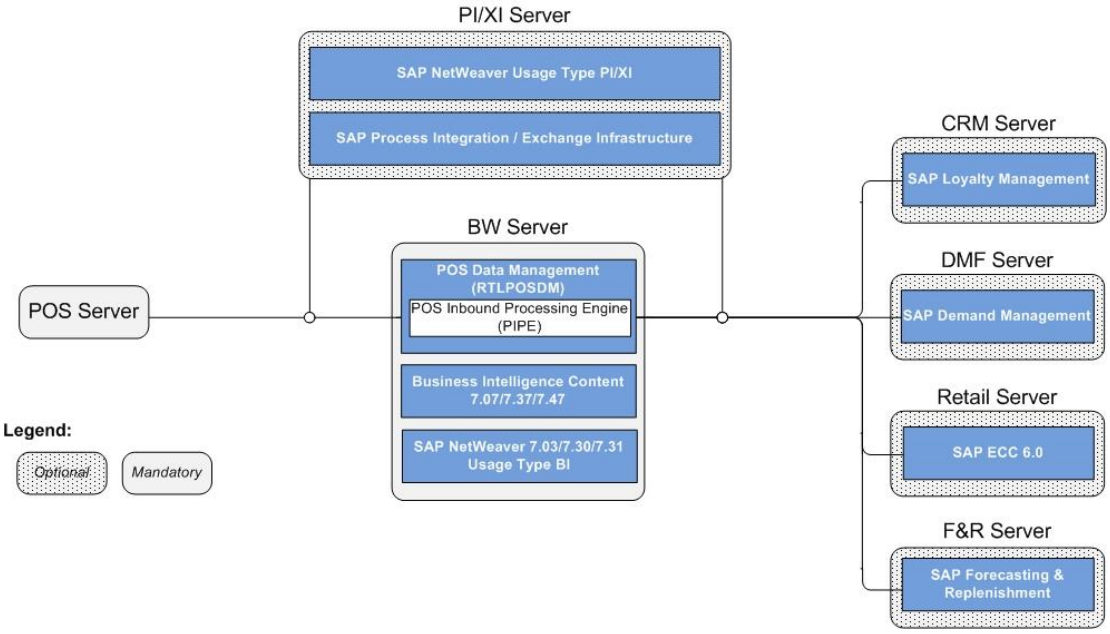
Fundamental Security Guides

Scenario, Application or Component Security Guide	**Path**
SAP HANA Security Guide	http://help.sap.com/hana/ → *SAP HANA Appliance → Security Information → SAP HANA Database - Security Guide*
SAP NetWeaver 7.3 Security Guide	http://help.sap.com/nw73/ → *Security Information → Security Guide*
Portal Security Guide	http://help.sap.com/nw73/ → *Security Information → SAP NetWeaver Security Guide → Security Guides for SAP NetWeaver Functional Units → Security Guides for Enterprise Portal (EP) and EP Core – Application Portal (EPC) → Portal Security Guide*
SAP NetWeaver Application Server ABAP Security Guide	http://help.sap.com/nw73/ → *Security Information → SAP NetWeaver Security Guide → Security Guides for SAP NetWeaver Functional Units → Security Guides for the Application Server → Security Guides for the AS ABAP → SAP NetWeaver* Application Server ABAP Security Guide
SAP NetWeaver BW Security Guide	http://help.sap.com/nw73/ → *Security Information → SAP NetWeaver Security Guide → Security Guides for SAP NetWeaver Functional Units → Security Guide for SAP NetWeaver BW*

For a complete list of the available SAP Security Guides, see the SAP Service Marketplace at **`service.sap.com/securityguide`**.

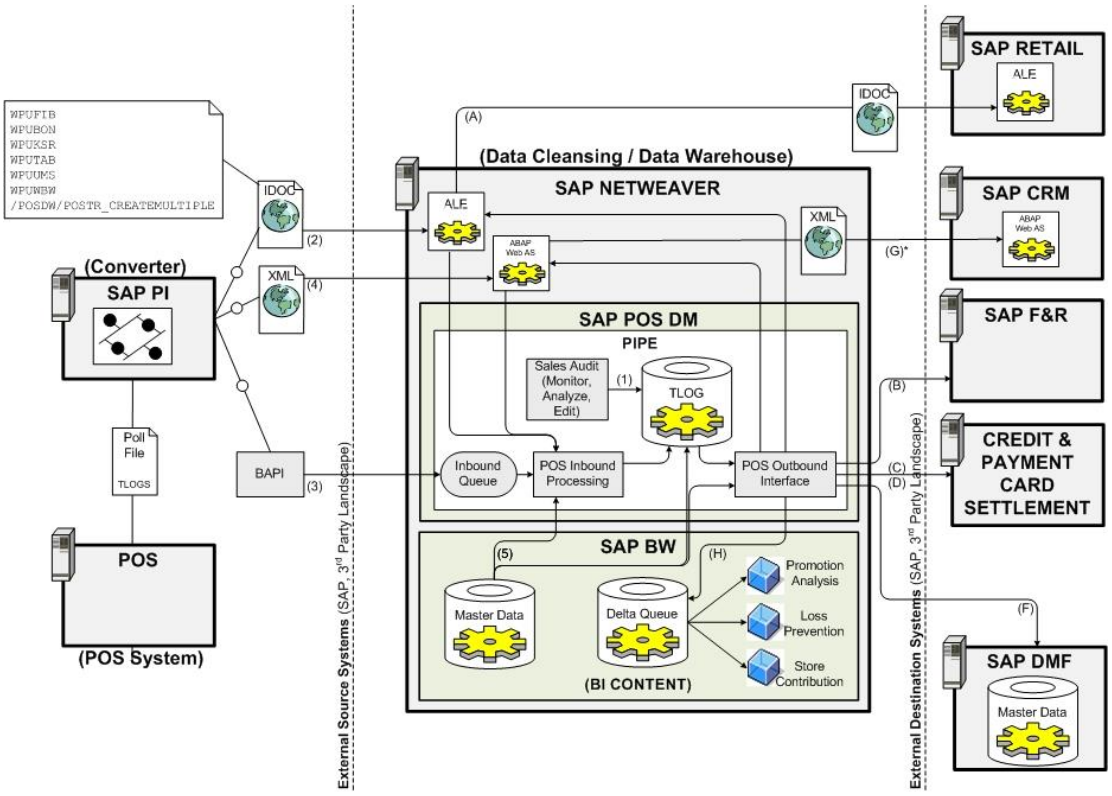
6.3Technical System Landscape

The figure below shows an overview of the technical system landscape for SAP POS DM (also referred to as PIPE).



6.4 Security Aspects of Data, Data Flow and Processes

The figure below shows an overview of the data flow for SAP POS DM.



* *using SAP PI for non-P2P communications*

The table below shows the security aspects to be considered for the processes illustrated above and which mechanisms apply.

Data / Process Flow		Description	Security Measure(s)
Inbound Flow	1	Manual creation of transaction within POS Workbench (ABAP Dynpro / Web Dynpro)	SAP Dialog User with necessary authorizations
	2	Inbound transaction from SAP Retail using IDoc	SAP Communication User with necessary authorizations, ALE tRFC, encryption**
	3	Inbound transaction using BAPI	SAP Communication User with necessary authorizations, RFC
	4	Inbound transaction using Web Service	SAP Communication User with necessary authorizations, HTTPS
	5	Master data retrieval from BW (non-sensitive data)	SAP Dialog/Communication User with necessary authorizations, RFC
Outbound Flow*	A	Outbound Aggregated Sales to SAP Retail using IDoc	SAP Communication User with necessary authorizations, ALE tRFC, encryption**
	B	Outbound Sales Data & Goods Receipt/Issue Information to SAP F&R using BAPI	SAP Communication User with necessary authorizations, RFC
	C	Outbound Credit Card Settlement using BAPI	SAP Communication User with necessary authorizations, RFC
	D	Outbound Payment Card using BAPI	SAP Communication User with necessary authorizations, RFC
	F	Outbound (Aggregated) Sales Data to DMF using BAPI or SAP PI for non-P2P communication	SAP Communication User with necessary authorizations, RFC
	G	Outbound Loyalty Information using Web Service	SAP Communication User with necessary authorizations, HTTPS
	H	Outbound Sales Analysis, Error Statistics, and Loss Prevention Information to SAP BW	SAP Dialog/Communication User with necessary authorizations

* Within Task Processing

** Sensitive data, such as credit card data, must be encrypted and stored in a secure manner within the SAP POS DM database (for example, information is encrypted or masked.)

6.5 User Administration and Authentication

SAP POS DM uses the user management and authentication mechanisms provided with the SAP NetWeaver platform, in particular SAP NetWeaver Application Server ABAP. Therefore, the security recommendations and guidelines for user administration and authentication as described in the SAP NetWeaver Application Server ABAP Security Guide also apply to SAP POS DM.

For more information, see: *http://help.sap.com/nw73/* → *Security Information* → *SAP NetWeaver Security Guide* → *Security Guides for SAP NetWeaver Functional Units* → *Security Guides for the Application Server* → *Security Guides for the SA ABAP* → *SAP NetWeaver Application Server ABAP Security Guide*.

In addition to these guidelines, we include information about user administration and authentication that specifically applies to SAP POS DM in the following topics:

- User Management

  This section lists the tools to use for user management, the user types required, and the standard user types that are delivered with SAP POS DM.

- Integration into Single Sign-On Environments

  This section describes how SAP POS DM supports SSO mechanisms.

6.5.1 User Management

User management for SAP POS DM uses the mechanisms provided with the SAP NetWeaver Application Server ABAP, for example, tools, user types and password policies. For an overview of how these mechanisms apply to SAP POS DM, see the sections below. In addition, a list of the standard user types required for operating SAP POS DM is provided.

Similarly, other components of the technical system landscape for SAP POS DM, such as SAP ERP Central Component (ECC), SAP BW, and/or SAP NetWeaver Process Integration (PI), also use the mechanisms provided with the SAP NetWeaver Application Server ABAP.

6.5.1.1 User Administration Tools

The table below shows the tools to use for user management and user administration with SAP POS DM.

User Management Tools

Tool	Detailed Description	Prerequisite
User and role maintenance with SAP NetWeaver AS ABAP (Transactions SU01, PFCG)	For more information, see: *http://help.sap.com/nw73/ → Security Information → SAP NetWeaver Security Guide → Security Guides for SAP NetWeaver Functional Units → Security Guides for the Application Server → Security Guides for the AS ABAP → SAP NetWeaver Application Server ABAP Security Guide → AS ABAP Authorization Concept* Also, see: *http://help.sap.com/nw73/ → Application Help → Function-Oriented View →Solution Life Cycle Management → Security and User Administration*	SAP NetWeaver Application Server ABAP should be running.

6.5.1.2 User Types

It is often necessary to specify different security policies for different user types. For example, your policy may specify that individual user types that perform tasks interactively must have their passwords changed on a regular basis, but not user types under which background processing jobs are run.

The following user types are required for SAP POS DM:

- Individual user types:
    - Dialog user type – is used for interactive system access, such as SAP GUI for Windows or RFC connections.
    - Internet user type – is used for Internet connections. The same policies apply to this user type as apply to the dialog user type, but for Internet connections.

- Technical user types:
    - Communication user type - is used for dialog-free communication through external RFC calls.
    - System/background user type - is used for background processing and communication within the system, such as, running scheduled inbound/outbound dispatcher jobs.

For more information about these user types, see: *http://help.sap.com/nw73/ → Security Information → SAP NetWeaver Security Guide → Security Guides for SAP NetWeaver Functional Units → Security Guides for the Application Server → SAP NetWeaver Application Server ABAP Security Guide → User Authentication → User Types*.

6.5.2 Standard Users

SAP POS DM does not require specialized standard users. SAP POS DM indirectly uses SAP NetWeaver BW Standard Users and SAP NetWeaver Standard Users.

For information about SAP NetWeaver BW Standard Users, see: *http://help.sap.com/nw73/ → Security Information → SAP NetWeaver Security Guide → Security Guides for SAP NetWeaver Functional Units → Security Guide for SAP NetWeaver BW → User Administration and Authentication → User Management*.

For information about SAP NetWeaver Standard Users, see*: http://help.sap.com/nw73/ → Security Information → SAP NetWeaver Security Guide → Security Guides for SAP NetWeaver Functional Units → Security Guides for Application Server → Security Guides for the AS ABAP → SAP NetWeaver Application Server ABAP Security Guide → User Authentication → Protecting Standard Users*.

6.5.3 Integration into SSO Environments

SAP POS DM supports the SSO mechanisms provided by SAP NetWeaver. Therefore, the security recommendations and guidelines for user administration and authentication described in the SAP NetWeaver Security Guide also apply to SAP POS DM.

The following SSO mechanisms are supported:

- Secure Network Communications (SNC)

  SNC is available for user authentication and provides an SSO environment when using the SAP GUI for Windows or Remote Function Calls (RFCs).

  For information, see: *http://help.sap.com/nw73/ → Security Information → SAP NetWeaver Security Guide → Security Guides for SAP NetWeaver Functional Units → Security Guides for Application Server → Security Guides for the AS ABAP → SAP NetWeaver Application Server ABAP Security Guide → User Authentication → Authentication and Single Sign-On → Secure Network Communications (SNC)*

- SAP logon tickets

  SAP POS DM supports the use of logon tickets for SSO when using a Web browser as the front-end client. In this case, users can be issued a logon ticket after they have authenticated themselves in the initial SAP system. The ticket can then be submitted to other systems (SAP systems or external systems) as an authentication token. The user is not required to enter a user ID or password for authentication, but can access the system once the system has checked the logon ticket.

  For information, see: *http://help.sap.com/nw73/ → Security Information → SAP NetWeaver Security Guide → Security Guides for SAP NetWeaver Functional Units → Security Guides for Application Server → Security Guides for the AS ABAP → SAP NetWeaver Application Server ABAP Security Guide → User Authentication → Authentication and Single Sign-On →* Logon Tickets

- Client certificates

  As an alternative to user authentication using a user ID and password, users that use a Web browser as a front-end client can provide X.509 client certificates for authentication. In this case, user authentication is performed on the Web server using the Secure Sockets Layer (SSL) Protocol and no passwords are required. User authorization is valid in accordance with the authorization concept in the SAP system.

  For information, see: *http://help.sap.com/nw73/ → Security Information → SAP NetWeaver Security Guide → Security Guides for SAP NetWeaver Functional Units → Security Guides for Application Server → Security Guides for the AS ABAP □ SAP NetWeaver Application Server ABAP Security Guide → User Authentication → Authentication and Single Sign-On → Client Certificates*

- Security Assertion Markup Language (SAML) 2.0

  SAML 2.0 provides a standards-based mechanism for SSO. SAML 2.0 enables the use of SSO across domains.

6.6 Authorizations

SAP POS DM uses the authorization concept provided by the SAP NetWeaver Application Server ABAP. Therefore, the recommendations and guidelines for authorizations described in the SAP NetWeaver Authentication Server ABAP Security Guide also apply to SAP POS DM.

The SAP NetWeaver authorization concept is based on assigning authorizations to users based on roles. Use the profile generator, Transaction `PFCG`, for role maintenance on the Application Server ABAP.

For more information on how to create roles, see: *http://help.sap.com/nw73/ → Security Information → SAP NetWeaver Security Guide → Security Guides for SAP NetWeaver Functional Units → Security Guides for the Application Server → Security Guides for the AS ABAP → SAP NetWeaver Application Server ABAP Security Guide → AS ABAP Authorization Concept*

6.6.1 Standard Roles

The table below shows the standard roles that are used by SAP POS DM.

Standard Roles

Role	Description	
/POSDW/ADMINISTRATOR	Performs administrative activities that should not be executed by normal users. These include deleting data and explicitly reconstructing index records.	
	Referenced Authorization Objects	Default Settings
	Cross-application Authorization Objects (AAAB): • Transaction Code Check at Transaction Start	S_TCODE field TCD has values: /POSDW/DELE, /POSDW/IDIS, /POSDW/IMG, /POSDW/ODIS, /POSDW/PDIS, /POSDW/QDIS, /POSDW/QMON, /POSDW/REFI, /POSDW/REFQ, /POSDW/REFT
	Basis: Administration (BC_A): • Cross Client Table Maintenance • Table Maintenance (via standard tools such as SM30)	S_TABU_CLI field CLII has value: ‚X‘ - Allowed: Maintenance of cross-client tables S_TABU_DIS field ACTVT has values: 02 - Change 03 - Display
	Basis - Central Functions (BC_Z) • ALV Standard Layout	S_ALV_LAYO field ACTVT has value: 23 - Maintain

<table>
<tr><th>Role</th><th colspan="2">Description</th></tr>
<tr><td></td><td>Business Content Authorizations (RSBC):
Authorizations for Outbound Processing in PIPE
Authorizations for Aggregation in PIPE
Authorizations for credit card numbers in PIPE
Authorizations for PIPE-related tasks
Authorizations for Inbound Queue in the PIPE
Authorizations for Data on POS Transactions</td><td>W_POS_AGGP field /POSDW/OAC has value: 16
W_POS_AGGR field /POSDW/AAC has values: 01, 02
W_POS_STAT fields have value: *
W_POS_TRAN field /POSDW/PAC has values: 01, 03, 06, 24, 31, 32, 34
or
field /POSDW/PAC has values: 03, 06, 24, 25, and field /POSDW/STO has value: *</td></tr>
<tr><td rowspan="4">/POSDW/SALES_AUDIT</td><td colspan="2">Performs the daily monitoring of the POS inbound data, including analyses and evaluations.</td></tr>
<tr><td>Referenced Authorization Objects</td><td>Default Settings</td></tr>
<tr><td>Cross-application Authorization Objects (AAAB):
Transaction Code Check at Transaction Start</td><td>S_TCODE field TCD has values: /POSDW/IDIS, /POSDW/MON0, /POSDW/MON1, /POSDW/MON2, /POSDW/PDIS</td></tr>
<tr><td>Business Content Authorizations (RSBC)
Authorizations for credit card numbers in PIPE
Authorizations for PIPE-related tasks
Authorizations for Data on POS Transactions</td><td>W_POS_CCNR fields have value: *
W_POS_STAT fields have value: *
W_POS_TRAN fields have value: *, except for field /POSDW/PAC has values: 01, 02, 03</td></tr>
<tr><td>/POSDW/SAP_QUERY_TRAN_S_RFC</td><td colspan="2">Role with RFC authorization for query of POS transactions.
This role contains all authorizations that are necessary to query POS transactions via the RFC module /POSDW/SALES_QUERY_RFC.
It also contains all authorizations that are necessary to post the processing confirmation via the RFC module /POSDW/CONFIRM_AGGR_PACKS_ARFC.</td></tr>
</table>

Role	Description	
	Referenced Authorization Objects	Default Settings
	Basis and Administration (BC_A) • Auth. Check for RFC access	S_TCODE field • ACTVT has value: 16 - Execute • RFC_NAME has values: /POSDW/CONFIRM_AGGR_PACK, /POSDW/SALES_QUERY_API, ARFC, ERFC • RFC_TYPE has value: FUGR

6.6.2 Standard SAP NetWeaver BW Roles

The table below shows the standard SAP NetWeaver BW roles that reference the SAP POS DM authorization objects. For more information on the standard roles, refer to the SAP NetWeaver BW Security Guide.

Standard Roles

Role	Description	
SAP_BW_IS_AF_SD	AFS BW role for Sales.	
	Referenced SAP POS DM Authorization Objects	Default Settings
	Business Content Authorizations (RSBC) Authorization for POS Transaction Data	/POSDW/PTR fields have value: *
SAP_BW_PCC_BRAND_MANAGER	BW role for SAP CRM Portal role Brand Manager.	
	Referenced SAP POS DM Authorization Objects	Default Settings
	Business Content Authorizations (RSBC) • Authorization for POS Transaction Data • Authorizations for credit card numbers in PIPE • Authorizations for PIPE-related tasks • Authorizations for Data on POS Transactions	• /POSDW/PTR fields have value: * • W_POS_CCNR fields have value: * • W_POS_STAT fields have value: * • W_POS_TRAN fields have value: *

6.6.3 Standard Authorization Objects

The table below shows the security-relevant authorization objects that are used by SAP POS DM.

Standard Authorization Objects

Authorization Object	Authorization Object Description	Field	Value	Field Description
/POSDW/LPA	Authorization for LPA	/POSDW/PTN	ACTV Active IACT Inactive INIT Initial NEW New	Pattern Status
/POSDW/PTR	Authorization for POS Transaction Data	/POSDW/STO	Selection from list of stores currently defined in customizing	Store
		/POSDW/PAC	01 Add or Create 02 Change 03 Display 06 Delete 24 Archive 25 Reload 31 Create TREX Index 32 Index TREX 33 Read TREX Index 34 Delete TREX Index	Activities for Authorization for POS Transactions
W_POS_AGGP	Authorizations for initiating outbound processing in PIPE	/POSDW/STO	Selection from list of stores currently defined in customizing	Store
		/POSDW/AGL	Selection from list of aggregation levels currently defined in customizing	Aggregation Level
		/POSDW/OTS	Selection from list of outbound tasks currently defined in customizing	Task for Outbound Processing

Authorization Object	Authorization Object Description	Field	Value	Field Description
		/POSDW/OAC	16 Process Outbound Task 85 Reverse Outbound Task	Activities for Outbound Processing in PIPE
W_POS_AGGR	Authorizations for performing aggregations in PIPE	/POSDW/STO	Selection from list of stores currently defined in customizing	Store
		/POSDW/AGL	Selection from list of aggregation levels currently defined in customizing	Aggregation Level
		/POSDW/AAC	02 Create Aggregate 02 Change Aggregate 03 Display Aggregate 05 Close Aggregate 06 Delete Aggregate 24 Archive Aggregate 25 Reload Aggregate	Activities for Aggregation in PIPE
W_POS_CCNR	Authorizations for credit card numbers in PIPE	/POSDW/STO	Selection from list of stores currently defined in customizing	Store
		/POSDW/CAC	02 Display Credit Card Number	Activities for Authorization for Credit Card Numbers
W_POS_FSPR	Field Selection Profile	/POSDW/FSP	Selection from list of field selection profiles currently defined in customizing	
W_POS_STAT	Authorizations for PIPE-related tasks	/POSDW/STO	Selection from list of stores currently defined in customizing	Store

Authorization Object	Authorization Object Description	Field	Value	Field Description
		/POSDW/SAC	01 Process Task 02 Reject Task 03 Prepare Task for Processing	Activities for Authorization for Task Status
		/POSDW/TAS	Selection from list of tasks currently defined in customizing	Task Code
W_POS_TIBQ	Authorizations for performing Inbound Queue operations in PIPE	/POSDW/STO	Selection from list of stores currently defined in customizing	Store
		/POSDW/IAC	01 Create 02 Change 03 Display 06 Delete 16 Process	Activities for TIBQ Authorization
W_POS_TRAN	Authorizations for changing data in POS transactions	/POSDW/STO	Selection from list of stores currently defined in customizing	Store
		/POSDW/PAC	01 Add or Create 02 Change 03 Display 06 Delete 24 Archive 25 Reload 31 Create TREX Index 32 Index TREX 33 Read TREX Index 34 Delete TREX Index	Activities for Authorization for POS Transactions
B_CCSEC	Unmasked display of credit card numbers	ACTVT	03 Display 06 Delete 71 Analyze	

6.7 Network and Communication Security

Your network infrastructure is extremely important in the protection of your system. Your network must support the communication required for your business needs without allowing unauthorized access. A well-defined network topology can eliminate many security threats based on software flaws at the operating-system level and the application level, or network attacks, such as eavesdropping. If users cannot log on to your application or database servers at the operating-system level or database layer, there is no way for intruders to compromise these servers and gain access to the backend system's database or files. If users are not able to connect to the server LAN, they cannot exploit well-known bugs and security holes in the network services on the servers.

The network topology for SAP POS DM is based on the topology used by the SAP NetWeaver platform. Therefore, the security guidelines and recommendations described in the SAP NetWeaver Security Guide also apply to SAP POS DM. Details that specifically apply to SAP POS DM are described in the following sections:

- Communication Channel Security

  This section describes the communication paths and protocols used by SAP POS DM.

- Network Security

  This section describes the recommended network topology for SAP POS DM. It shows the network segments for the client and server components and where to use firewalls for access protection. It also includes a list of the ports needed to operate SAP POS DM.

- Communication Destinations

  This section describes the information needed for the communication paths, for example, which users are used for which type of communication.

For more information on network and communication security, see: *http://help.sap.com/nw73/ → Security Information → SAP NetWeaver Security Guide → Network and Communication Security*

For more information on connectivity and interoperability technologies, see: *http://help.sap.com/nw73/ → Security Information → SAP NetWeaver Security Guide → Security Guides for Connectivity and Interoperability Technologies*

For security-related information for the SAP Retail Solution, see: *http://service.sap.com/securityguide → SAP Business Suite Applications → SAP ERP → 6.0 → SAP ERP Central Component Security Guide → Network and Communication Security*. Also, review the Network and Communication Security section that is specific to the SAP Retail Solution.

For SAP NetWeaver BW, see: *http://help.sap.com/nw73/ → Security Information → SAP NetWeaver Security Guide → Security Guides for SAP NetWeaver Functional Units → Security Guide for SAP NetWeaver BW → Network and Communication Security*.

6.7.1 Communication Channel Security

The table below shows the communication channels used by SAP POS DM, the protocol used for the connection, and the type of data transferred.

Communication Path	Protocol Used	Type of Data Transferred	Data Requiring Special Protection
Front-end client using SAP GUI for Windows to application server	DIAG	All application data	Passwords, credit card information
Application server to third-party application	HTTPS	System ID, client, and host name	System information (host name), personal data, transactional data, and credit card information
Document upload	HTTPS	XML document	Personal data, transactional data, and credit card information
Application server to application server	RFC	Application data	System information, personal data, transactional data, and credit card information
Application server to application server	IDOC	Application data records	Personal data, transactional data, and credit card information
Web service client to Web service provider	SOAP	XML document	Personal data, transactional data, and credit card information

DIAG and RFC connections can be protected using SNC. HTTP connections are protected using the SSL protocol. SOAP connections are protected using Web services security.

Use secure protocols (SSL, SNC) whenever possible.

For more information on transport layer security, see: http://help.sap.com/nw73/ → *Security Information → SAP NetWeaver Security Guide → Network and Communication Security → Transport Layer Security*

For more information on Web services security, see: http://help.sap.com/nw73/ → *Security Information → SAP NetWeaver Security Guide → Security Guides for Connectivity and Interoperability Technologies → Security Guide Web Services (ABAP)*

6.7.2 Network Security

The network topology for SAP POS DM is based on the topology used by the SAP NetWeaver platform. Therefore, refer to the following documentation for information on network security:

- SAP Supply Chain Management Security Guide
- SAP Supplier Relationship Management Security Guide
- SAP ERP Component Security Guide
- SAP Customer Relationship Management Security Guide
- Security Guide for SAP NetWeaver BI

The security guides listed above can be found on the SAP Service Marketplace at **`service.sap.com/securityguide.`**

6.7.3 Ports

SAP POS DM runs on SAP NetWeaver and uses the AS ABAP ports. For more information, see: *http://help.sap.com/nw73/* → *Security Information* → *SAP NetWeaver Security Guide* →*Security Guides for SAP NetWeaver Functional Units* → *Security Guides for the Application Server* → *Security Guides for the AS ABAP* → *SAP NetWeaver Application Server ABAP Security Guide* → *Network Security for AS ABAP* → *AS ABAP Ports*.

For other components, for example, SAPinst, SAProuter, or the SAP Web Dispatcher, see: *http:// sdn.sap.com/irj/sdn/security* → *Knowledge Center* → *Infrastructure Security* → *Network and Communications Security* → TCP/IP Ports Used by SAP Applications.

6.7.4 Communication Destinations

The incorrect configuration of users and authorizations for connection destinations can result in high security flaws. To ensure the proper configuration of users and authorizations, do the following:

- Choose the appropriate user type: `Communication` or `System`
- Assign only the minimum required authorizations to a user type
- Choose a secure and secret password for a user type
- Store only connection user logon data for `System user types`
- Choose trusted system functionality

Connection destinations are particularly important in SAP POS DM for connecting incoming data sources and outgoing destinations. SAP POS DM does not provide any preconfigured RFC destinations; these destinations are created by customers. Therefore, connection information (such as connection type, user name and password) is not defined directly within SAP POS DM; it relies on references to system-defined and/or system-administered connections, for example, RFC destinations or Web service configurations.

You require RFC destinations to connect SAP and non-SAP systems to SAP POS DM. If communication is to be accomplished with IDocs using Application Link Enabling (ALE), you may require additional ALE configurations to ensure that the applicable message types are correctly routed.

For inbound communication to SAP POS DM, you must do the following:

- Define SAP POS DM as a target destination within the source system, for example, as an RFC destination with a specific user identified.
- Define a user with the necessary authorizations for SAP POS DM

For outbound communication from SAP POS DM, you must do the following:

- Define all target destinations within SAP POS DM, for example, as an RFC destination with a specific user identified for the target system.
- Configure SAP POS DM Customizing as the target destinations.
- Define all users with the necessary authorizations on the target system(s).

The table below shows an overview of the communication destinations used by SAP POS DM.

Connection Destinations

Destination	Delivered	Type	User, Authorizations	Description
Customer-defined in external system	No	RFC	RFC Authorization Objects: • S_ICF (for client system) • S_RFC (for server system) • S_RFCACL (for trusted systems only) POS DM Authorization Objects: • W_POS_TIBQ (Activity '01' Create)	Inbound transaction data from BAPI call
Customer-defined through communication channel (either at runtime or configured for proxy/logical port) in external system	No	HTTP(S)	Web Service Authorization Objects: • S_SERVICE Web Service Roles: • SAP_BC_WEBSERVICE_CONSUMER	Inbound transaction data from Web Service call (from POS)

Destination	Delivered	Type	User, Authorizations	Description
Customer-defined in external system	No	tRFC	RFC Authorization Objects: • S_ICF (for client system) • S_RFC (for server system) • S_RFCACL (for trusted systems only) POS DM Authorization Objects: • W_POS_TIBQ (Activity '01' Create)	Inbound transaction data from IDOC through ALE (such as for SAP Retail, etc.)
Customer-defined in Customizing of SAP POS DM system	No	RFC	RFC Authorization Objects: • S_ICF (for client system) • S_RFC (for server system) • S_RFCACL (for trusted systems only) ALE Authorization Objects: • B_ALE_RECV • B_ALE_REDU POS DM Authorization Objects: • W_POS_AGGP POS DM Roles: • /POSDW/ADMINISTRATOR • /POSDW/SALES_AUDIT	Outbound transaction data from BAPI / Function Module resulting from Task Processing (such as for SAP ERP, SAP F&R, Credit Card Settlement, Payment Card, , etc.)
Customer-defined through communication channel (either at runtime or configured for proxy/logical port) of SAP	No	HTTP(S)	Web Service Authorization Objects: • S_SERVICE Web Service Roles: • SAP_BC_WEBSERVICE_CONSUMER POS DM Authorization	Outbound transaction data from Web Service call resulting from Task Processing (such as for SAP CRM)

Destination	Delivered	Type	User, Authorizations	Description
POS DM system			Objects: • W_POS_AGGP POS DM Roles: • /POSDW/ADMINISTRATOR • /POSDW/SALES_AUDIT	
Customer-defined in external system	No	tRFC	RFC Authorization Objects: • S_ICF (for client system) • S_RFC (for server system) • S_RFCACL (for trusted systems only) POS DM Authorization Objects: • W_POS_TIBQ (Activity '01' Create)	Outbound transaction data from IDOC resulting from Task Processing (such as for SAP Retail, etc.)

6.8 Internet Communication Framework Security

You should only activate the services that are needed for the applications running in your system. For SAP POS DM, the following service is needed:

- `POSTRANSACTERPBLKCRTRQ` - Inbound POS Transactions Service

You must use the `SICF` transaction to activate this service.

If your firewall(s) uses URL filtering, you must note the URLs used for the services and adjust your firewall settings accordingly.

For information on activating and deactivation ICF services, *see:* http://help.sap.com/nw73/ → *Application Help* → *Function-Oriented View* → *Application Server* → *Application Server Infrastructure* → *Connectivity* → *Components of SAP Communication Technology* → *Communication Between ABAP and Non-ABAP Technologies* → *Internet Communication Framework* → *Development* → *Server-Side Development* →*Creating and Configuring ICF Services* → *Activating and Deactivating ICF Services*.

For more information on ICF security, see: http://help.sap.com/nw73/ → *Security Information* → *SAP NetWeaver Security Guide* → *Security Guides for Connectivity and Interoperability Technologies* → *RFC/ICF Security Guide.*

6.9 Enterprise Services Security

The following sections in the SAP NetWeaver Security Guide are relevant for all enterprise services delivered with SAP POS DM:

- For information on Web service security, see: *http://help.sap.com/nw73/ → Security Information → SAP NetWeaver Security Guide → Security Guides for Connectivity and Interoperability Technologies → Security Guide Web Services (ABAP)*
- For information on recommended Web service security scenarios, see: *http://help.sap.com/nw73/ → Application Help → SAP NetWeaver Library: Function-Oriented View → Security → Recommended WS Security Scenarios*
- For information on process integration security, see: *http://help.sap.com/nw73/* → Security Information → SAP NetWeaver Security Guide → Security Guides for SAP NetWeaver Functional Units → SAP NetWeaver Process Integration Security Guide

6.10 Payment Card Security According to PCI-DSS

The Payment Card Industry Data Security Standard (PCI-DSS) was developed jointly by major credit card companies to create a set of common industry security requirements for the protection of credit card holder data. Compliance with this standard is relevant for companies processing credit card data. For more information, see *http://www.pcisecuritystandards.org*.

This section is provided to assist you in implementing payment card security aspects. It also presents issues that you must consider in order for your deployment to be PCI-DSS compliant.

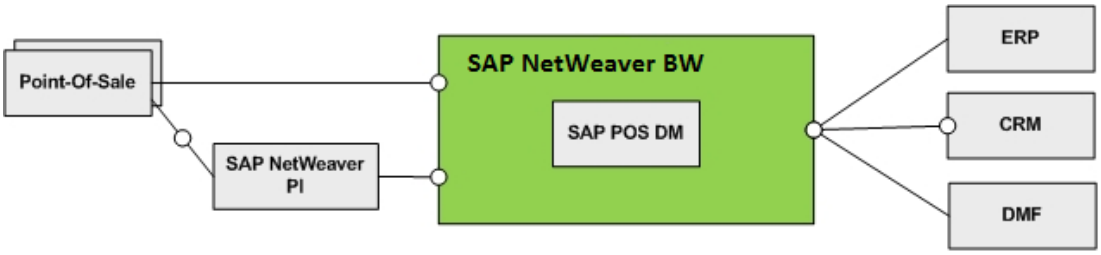
PCI-DSS includes more than the issues and information provided in this section. Ensuring that your system is PCI-DSS compliant is entirely the customer's responsibility. SAP is not responsible for ensuring that a customer is PCI-DSS compliant.

The PCI-DSS compliance information provided in this guide is application-specific. For general information on ensuring payment card security, see: *http://help.sap.com/ → SAP Business Suite → SAP ERP → SAP ERP Central Component → Security Information → SAP Service Marketplace → <Enhancement Pack> → SAP ERP Security Guides → Payment Card Security*.

For updated general PCI-DSS information, see also SAP Note 1609917.

6.10.1 Credit Card Usage Overview

The SAP POS DM application is an integral part of the Store Connectivity scenario. It is possible that each connection contains PCI-relevant data. As such, each communication line displayed in the diagram below could be subject to the PCI-DSS, as could each component. (PCI-DSS implications for each component are discussed in the individual security guides).



6.10.1.1 SAP POS DM

SAP POS DM can be used to support the Sales Audit transaction, during which credit card settlements are reviewed. As such, it must be configured to allow the Sales Auditor to access credit card data. SAP POS DM can also serve as a transaction repository, where transactional data (including credit card data) can be aggregated and forwarded to other systems (Credit Card Settlement, SAP CRM, and SAP NetWeaver BW [for BI Content]) for additional processing.

SAP POS DM's PIPE includes the following functionality to support your PCI-DSS compliance:

- Encryption of credit card data within PIPE using the `SAPCRYPTOLIB` encryption library
- Decryption of credit card data and decrypted display within PIPE
- Tracing and logging of decryption requests within PIPE
- Masking the display of credit card data in the POS Workbench
- Managing and distributing keys to the source POS

6.10.1.2 Detailed Data Flow of Credit Card Data

The PCI-DSS relevant data within a POS transaction consists of credit card data that can be stored within an application, and sensitive authentication data that must not be stored within an application.

Credit card data is transferred as part of the POS transaction data from a POS to the SAP POS DM; the service code is not transmitted with this data. Depending on the configuration of your transaction transfer application, the credit card data can be encrypted (symmetrically in an asymmetric envelope) or unencrypted using the `PAYCRV` application.

You can configure your system to transfer the credit card data using the HTTPS communication protocol, regardless of how the individual parts of the TLOG are encrypted.

The data is transferred from the POS to the SAP POS DM as follows:

1. The SOAP adapter residing in the adapter engine, the J2EE Stack, processes the HTTPS request. The SOAP adapter calls additional EJBs to encrypt the message, but the payload itself does not use SOAP-enveloping. Optionally, encrypted parts of the payload can be decrypted.
2. The SOAP adapter replaces all credit card data with dummy values and appends a privacy container as an RSA-encrypted attachment to the XML message using the SAP Store, Secure and Forward (SSF) API.
3. The XML messages are mapped to the format of the SAP POS DM inbound interface and forwarded to the SAP POS DM through an RFC adapter (which also resides in the adapter engine).

   You can configure the communication to use Secure Network Communication (SNC) for the Remote Function Call (RFC), which results in an encrypted data transfer between the SAP NetWeaver PI and the SAP POS DM.

   During the lifetime of a message in SAP NetWeaver PI, all credit card data is stored in the database as part of the encrypted XML message attachment (both on the ABAP stack and the J2EE stack).
4. SAP POS DM receives the TLOG messages and stores the content within the TLOG table in the transactional database.
5. The credit card data is separated as follows:

   - The credit card holder’s name and the card’s expiration date are stored in unencrypted format in the TLOG table. (The TLOG table content can be accessed by an authorized user in the POS Workbench, where the data is displayed in clear text format.)
   - The Permanent Account Number (PAN) is stored in encrypted and secure format using the `PAYCRV` application.

   Only users with the required authorization can view the PAN in clear text format. Authorized users can request that the PAN be displayed in clear text format by choosing the corresponding button in the interface. Each time a user requests to view a PAN unmasked, it is logged in the application log.

6. The IDoc containing the POS transactional data is sent from the SAP POS DM to the SAP ERP POS Inbound over HTTPS. During the process, all PCI-DSS relevant data is unencrypted.
7. SAP ERP POS Inbound stores the data with an unencrypted or encrypted PAN using the `PAYCRV` application.

6.10.2 PCI-Related Customizing

6.10.2.1 SAP Basis Customizing Prerequisites

SAP POS DM PCI-DSS Security Customizing settings enhance the customizing settings of SAP Basis. The required SAP Basis Customizing settings consist of:

- Installing and configuring the `SAPCRYPTOLIB` encryption library
- Establishing the payment card security settings
- Configuring the key versioning

Depending on your system, you may require additional configurations. Check your system to verify if you need to set up any of the following:

- Your POS to use the public key and version for encryption
- Your POS to transfer secured credit card data with the public key
- SAP NetWeaver PI for secure handling of the credit card data
- SAP ERP, SAP CRM, or other subsequent systems for secure handling of credit card data
- Secure IDoc and BAdI communication

Installation of the Encryption Library SAPCRYPTOLIB

The `SAPCRYPTOLIB` encryption library contains the functions required to encrypt credit card numbers.

You can define general settings for the execution of the encryption software in the SAP Customizing Implementation Guide under *SAP NetWeaver → Application Server → System Administration → Maintain the Public Key Information for the System*.

For more information on installing the `SAPCRYPTOLIB` encryption library, see the section *Installing SapCryptolib* in SAP Note 662340.

If you set the encryption with the `SSFA` transaction, you must use the `PAYCRV` application.

Payment Card Security Settings

Payment card security settings are applied to all newly created or changed POS transactions that include credit card information.

Basic Settings

You must configure the checking rules for payment card types as described in the SAP Customizing Implementation Guide under *Cross-Application Components → Payment Cards → Basic Settings → Assign Checking Rule*. These rules are used for entering the payment card number. To avoid possible errors when making entries, you can use the checking rules to verify that you have met the conditions of the relevant payment card type.

Settings for Payment Card Security

You must configure settings for the encryption, masking and access logs of payment cards. For information on configuring the settings, see: SAP Customizing Implementation Guide under *Cross-Application Components → Payment Cards → Basic Settings → Make Security Settings for Payment Cards*.

 Note

For SAP NetWeaver 7.0, you can access this activity from Maintain View `V_TCCSEC`.

Sample settings are as follows:

- `Security Level` – Masked Display and Encrypted When Saved
- `Access Log` – Logging of Unmasked Display
- `Additional Authorization Check for Unmasked Display` – enabled
- `Visible Characters for Masking:`
  - At Start - 4
  - At End – 4
  - Key Replacement Active - Enabled

 Note

To enable encryption, choose the `Masked Display and Encrypted When Saved` option in the `Security Level` field.

If you select the `Masked Display, Not Encrypted When Saved` as the security level, credit card numbers may be lost in the SAP system. Only choose this setting if the payment data is not to be processed any further.

Maintain Payment Card Types

You must execute the steps described in this section only if you have set the `Masked Display and Encrypted When Saved` security level to the values described in the previous section.

To specify if payment card numbers for a credit card institution must be encrypted, enter the payment card type and assign a check rule. If you want to enable data encryption for a credit card type, choose the encryption check box.

For detailed instructions, see the SAP Customizing Implementation Guide under *Cross Application Component → Payment Cards → Maintain Payment Card Type*.

Note that if the encryption indicator for a credit card institution is not set, but the general security level is set to `Masked Display and Encrypted Save`, the security level for the credit card institution will be lowered to `Masked Display, No Encrypted Save`.

Masking Credit Card Number in IDocs

The `WECRYPTDISPLAY` transaction allows you to mask the display of credit card numbers in IDocs. To do so, you must make the following entries in the `Assignment: Encrypted Segment Field Display` table:

- Message Type: `WPUBON`
- Segment Type: `E1WPB06`
- Field Name: `KARTENNR`

ERP Customizing- Customizing of Encryption Save Mode

The Customizing of `Encryption Save Mode` allows you to specify if existing Globally Unique Identifiers (GUIDs) can be reused for different credit cards. You can create your own BAdI implementation. If you do not create your own, the application uses the following existing GUID:

Enhancement spot: `ES_WPOS_PCA_SECURITY`

BAdI definition: `WPOS_PCA_SECURITY`

6.10.2.2 SAP POS DM Customizing

In addition to the configuration settings described in section SAP Basis Customizing Prerequisites, the SAP POS DM Customizing activity defines how to store, process, and use sensitive data. For more information, see *POS Data Management → POS Inbound Processing → General Settings → Define Security Profiles.*

The table below shows the settings for the encrypted storage of payment card numbers and how they are displayed on the User Interface. The encryption and display settings are:

Setting	Description	Example
Security Profile	Displays the identifier of the security profile.	0001
Description	Describes the security profile.	SAP Standard Security Profile
SSF Application	Identifies the `STRUST` application, which is part of SAP Basis.	`PAYCRV` (versioned keys)
Save Mode	Provides you with the option to Re-use Existing Entry for a cross-selling analysis of a credit card number or GUID in SAP BW. This setting does not affect your PCI-DSS compliancy. However, according to PCI-DSS, cross-selling analysis with card numbers should not be used, and data mining on a credit card could invalidate your PCI-DSS compliance.	Reuse Existing Entry
Security Check	The security check must be set to `Allow Security Level Check` to be compliant with the PCI-DSS standard. This allows SAP POS DM to work and check according to the payment card settings in the `TCCSEC` table in SAP Basis.	Allow Security Level Check

6.10.3 Rotation or Changing of Encryption Keys

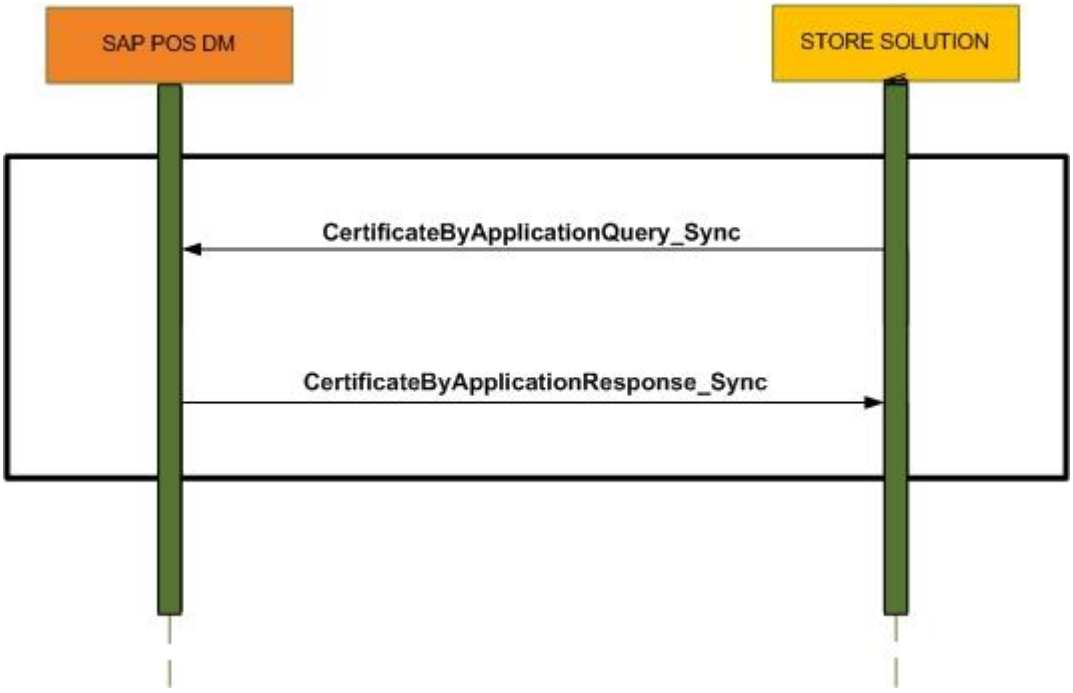
To be PCI-DSS compliant, encryption keys must be changed on a regular basis. See SAP Note 1151936 for more information about key replacement for encryption of payment card data.

6.10.3.1 Key Distribution Web Service

PCI-DSS requires that credit card data must be encrypted if it is transmitted over open, public networks. To fulfill this requirement, the Key Distribution Web service was implemented for the distribution of X.509 certificates. The Web service was under the NetWeaver governance approach. No SAP Business Objects or ARIS content are delivered with the Web service.

6.10.3.2 Pull Mechanism in SAP POS DM

A pull mechanism is used between SAP POS DM and the POS. The POS is the Web service consumer and SAP POS DM is the service provider. The communication between the two systems is peer-to-peer and does not use SAP NetWeaver PI.



6.10.3.3 Message Choreography SAP POS DM and POS Store Solution

Certificates sent using Web services have an X.509 format, the standard format for public key certificates.

The Web service has a query/response pattern that contains one service interface for the query and one for the response. These service interfaces are modeled on the SAP NetWeaver PI system (SAP ABA 7.02 and SAP ABA 7.20). SAP NetWeaver PI core and global data types are used as the data types.

Service Interface

The `CertificateByApplicationQueryResponse_In` service interface, which has a query/response communication pattern, contains the following three messages:

Name	Type	Role	Description
`CertificateByApplicationQuery_sync`	Message Type	Request	Request for the certificate and the application
`CertificateByApplicationResponse_sync`	Message Type	Response	Response that contains the certificate and the version
`StandardMessageFault`	Fault Message Type	Fault	Fault message

`CertificateByApplicationQuery_sync` is the message type for the request section of the `CertificateByApplicationQueryResponse_In` service interface. It contains the SSF application for which the certificate is being requested.

Name	Type	Description
Application	String	SSF Application

`CertificateByApplicationResponse_sync message` contains the current certificate and version of the requested application.

Name	Type	Description
Certificate	BinaryObject	X.509 Certificate
Version	IntegerValue	Current active version of the certificate
Log	Log	GDT Log

The SSF application is required for the following reasons:

- It is the importing parameter of the `SSFV_GET_CURRENT_KEYVERS_RFC` function module, which is called from the proxy class.
- Without the SSF application, it is not possible to get the key version.

 Syntax

```
IMPORTING
  VALUE(IF_APPLIC) TYPE  SSFAPPL
EXPORTING
  VALUE(EF_KEYVERSION) TYPE  SSFKEYVERS
  VALUE(EF_CERTIFICATE) TYPE  XSTRING
EXCEPTIONS
    VERSION_NOT_FOUND
    CERTIFICATE_NOT_FOUND
```

The corresponding class of the proxy contains a method with an importing parameter that is the request message type and an exporting parameter that corresponds to the response message type.

SAP POS DM Keys

Key rotation in SAP POS DM is performed using the `STRUST` transaction. SAP POS DM also provides you with a key management tool. The `/POSDW/KEY_DISTRIB_DISPLAY` report displays information about used and distributed key versions.

The key management tool performs a selection on a large central log database that can be used by many applications, therefore you must make the selection as specific to your needs as possible. For example, select the following:

- Application log object: `KEY_DIST`
- SSF application: `PAYCRV`

The results of the selection allow you to identify:

- Any key versions activated for deletion
- The key versions still in use
- The system to which the key was distributed

6.10.3.4 Key Distribution User Interface

The /POSDW/DISP_KEYV transaction displays a list of the key versions and allows you to do the following:

- Track which users required a key
- Link to the transaction where an administrator can perform key management
- Flag a key version for deletion. This requires a manual verification by the administrator to ensure that there are no inbound messages using the encrypted key that is flagged for deletion.

Customizing

At least one key version must exist. An administrator can create key versions using the SSFVA transaction.

Process

Every time the user uses the Key Distribution Web service, the information is saved in the application log. The key version is written in a message structure of the log. The user name, date, time, KEY_DISTR application log object, SSFV application name, transaction and log number are also written to the log.

An administrator can run the /POSDW/KEY_DISTRIB_DISPLAY report to search the application log and display information. The existing backend capacity of the application log provides search functionality, persistence of data and retrieval functionality from the database. The displayed information is read-only.

After the administrator manually verifies in the POS, SAP NetWeaver PI and SAP POS DM to ensure that they do not contain encrypted information with a particular key version, the administrator can flag this key version for deletion using the corresponding button (under the description FLG_DEL). The rest of the deletion process can be carried out by choosing the KEY_MGNT button to execute the SSFVA transaction.

6.10.4 Masked/Unmasked Display

The payment card security settings, described in the Customizing section, specify the following:

- Security level - with or without encryption/masking
- Update of the access log with unmasked display
- Selection of additional authorization check with unmasked display
- Number of unmasked characters displayed

In SAP POS DM, credit card numbers can only be displayed in the POS Workbench (using the `/POSDW/MON0` transaction). When a user displays the details of a sales transaction with a means of payment that includes a credit card settlement segment, the credit card details are masked (that is, an asterisk (*) is used to replace each number). If the `B_CCSEC` authorization object exists in the user's master record, the user has the authorization level required to display the credit card details in an unmasked form. The user can display the credit card details using the magnifier icon next to the credit card number. This action triggers a new entry in the access log and opens a new window that displays the unmasked details.

The logging mechanism allows you to trace which user has displayed which payment card and when. If the user does not have the authorization level required to display unmasked credit card numbers, the magnifier icon is not displayed in the POS Workbench.

In order for a user to be able to view any credit card information in the POS Workbench, you must enable the `W_POS_CCNR` authorization object for activity 02, Display Credit Card Number.

The SAP Basis authorization role `B_CCARD` is enhanced to allow the display of unmasked credit card data.

The `/POSDW/SALES_AUDIT` authorization role allows auditors to review credit card settlement information.

At a minimum, the following credit card data fields must be encrypted:

- Credit card expiration date
- Credit card holder name
- Authorization number
- Credit card number

The `W_POS_FSPR` authorization object specifies the protection level required for this sensitive data. The authorization object has only one field, *Field Selection Profile*. It is used to specify if data is to be displayed in the interface or not, depending on which profiles are added to it for a specific user or role.

In SAP POS DM Customizing, you can define field selection profiles. This allows you to define what information is displayed for a user profile, that is, which list of structures and fields are visible to a user based on a user's profile.

6.10.5 Logging of Payment Card Number Access

SAP POS DM uses the following SAP Basis reports and programs to display and delete logs about user access to unmasked credit card data:

- The CCSEC_LOG_SHOW transaction - allows users to display a log of users who have viewed decrypted credit card information in the POS Workbench. To access the log, a user must have authorization for activity 71 in the B_CCSEC authorization object.
- The CCSEC_LOG_DEL transaction - allows users to delete log records about users who have accessed unmasked credit card data in the POS Workbench. A user can only delete log records that are at least one year old. To activate the deletion program, a user must have authorization for activity 06 in the B_CCSEC authorization object.

 Note

The integrity of the log does affect your PCI-DSS compliance. If the log is not secured, your PCI-DSS compliance is compromised.

6.10.6 Encryption, Decryption, and Storage of Encrypted Credit Card Numbers

SAP POS DM stores transactional data in the /POSDW/TLOG table. The table contains the /POSDW/LRAW transactional data, which is stored in a 32000-length LRAW string. This is the only table in SAP POS DM in which credit card data is stored. All credit card data stored in the LRAW strings must be encrypted.

6.10.6.1 SAP POS DM

IDoc Encryption

BAdIs are used to encrypt and decrypt data. The IDOC_DATA_MAPPER BAdI is used to encrypt and save data to the IDoc database. The IDOC_DATA_CRYPTION is used to read and decrypt data from the IDoc database.

Three IDoc types contain credit card numbers:

- WPUBON01
- WPUTAB01
- /POSDW/POSTR_CREATEMULTIPLE02

The /POSDW/PCA_IDOC_MAP BAdI is used to encrypt credit card numbers in the WPUBON01 and WPUTAB01 IDocs. The /POSDW/PCA_IDOC_CRYPT BAdI implementation is used to decrypt credit card numbers in the WPUBON01 and WPUTAB01 IDocs.

To enable the encryption of credit card numbers in the /POSDW/POSTR_CREATEMULTIPLE02 IDoc type, the CARDGUID and ENCTYPE fields have been added to the /POSDW/E1BPCREDITCARD segment of the /POSDW/POSTR_CREATEMULTIPLE02 IDoc basic type. The /POSDW/PCA_IDOC_MAP and /POSDW/PCA_IDOC_CRYPT BAdIs have been enhanced to process the updated segment type.

Processing of Incoming Encrypted Data

The /POSDW/BAPI_POSTR_CREATE BAPI, the /POSDW/CREATE_TRANSACTIONS_EXT remote function module and the service inbound interfaces have been enhanced to contain a secured data segment or cipher; they have all been asymmetrically encrypted using PKCS7.

The decrypted secured data must conform to a defined XML structure and is converted to an internal table for later processing by the /POSDW/XSLT_SECUREXMLTOTABLE simple transformation.

6.10.6.2 SAP ERP

IDoc Encryption Process

Once the IDoc data records have been sent to the `IDOC_PCI_ENCR_IM` BAdI implementation, the encryption of the credit card data begins. The encryption process is as follows:

1. The segment in the IDoc record that contains the credit card information is identified.
2. The encryption process maps the data from the `E1WPZ02` and `E1WPB06` segments to the internal structure.
3. The data is used to retrieve the card GUID, the name of the credit card institution number, and the credit card number.
4. The security level check is performed.

   In Customizing, each credit card institution is assigned a security level. If the security level is set to 2, the credit card number is encrypted; if the security level is set to 1, the credit card number is masked.
5. The card GUID and encryption type are mapped to the structure for decryption.
6. A message is created to confirm the success or failure of the encryption.
7. The consistency check is performed.

Decryption Process

Once the IDoc data records have been sent to the `IDOC_PCI_DECRYPTION_IM` BAdI implementation, the decryption of credit card data begins. The decryption process is as follows:

1. The segment in the IDoc record that contains the credit card information is identified.
2. The decryption process maps the data from the `E1WPZ02` and `E1WPB06` segments to the internal structure.
3. The data is used to retrieve the card GUID, the encryption type, and the credit card number.

   The encryption type is currently a fixed value set to 2.
4. The credit card number is decrypted.
5. A message is created to confirm the success or failure of the decryption.

Secure Handling of Credit Card Information during POS Processing

IN SAP POS DM, credit card data is handled during inbound and outbound processing. Inbound and outbound processing are executed using IDoc types.

During outbound processing, store systems are provided with customer-specific credit card master data. Outbound processing is executed using the `WP_PER01` IDoc type. However as this IDoc type is for internal use only, it cannot be used for the encryption of credit card data.

During inbound processing, credit card details are a payment attribute of sales transactions. Encryption is required on the IDoc database to support IDoc types that contain credit card data. No other changes are required to securely handle credit card data:

- No encryption of the customer POS database is required as no business data or credit card data is stored in it.
- Follow-on applications, such as the Retail Information System (RIS) or Business Warehouse (BW), are only provided with masked credit card numbers in order to perform cross-selling analysis, therefore they do not require to support encryption.
- No changes are required to the user interfaces of the POS Monitor or Sales Audit because the behavior remains the same as it was before the IDoc database was encrypted: the credit card information is provided in clear text format. Credit card information is temporarily available in clear text during inbound processing to internal applications and when the data is transferred to follow-on applications (such as Analytics and Sales & Distribution). However, as the risk of losing credit card data at this point is minimal, no changes for encryption are required.
- Only authorized users can see the credit card data; regular users cannot see secure data while it is being processed internally.

6.10.7 Migration

The `/POSDW/PCA_MIGRATION` report allows you to move decrypted or encrypted credit card numbers from other systems to masked or encrypted credit card numbers in SAP POS DM. You can access the `/POSDW/PCA_MIGRATION` report using the `/POSDW/PCAM` transaction.

To use the `/POSDW/PCA_MIGRATION` report, you must have authorization for activity 02 in the `W_POS_TRAN` authorization object. The required underlying security settings must also be configured.

You can consult the migration log to determine for which transactions the data was not migrated successfully. The log provides an overview, by store and transaction date, of how many transactions were found and whether or not the data was successfully changed. If an error occurred for a transaction, no credit card numbers or information is displayed in the log, only the transaction index, store number, posting date, and task number are provided.

Transaction data can only be changed if it is not posted in any task. All tasks for the transaction must have one of the following statuses:

- Ready
- Error
- Canceled
- Canceled with Warning

Only transaction data that is not posted to a task can be changed. All transactions must have one of the following statuses:

- Ready
- Error
- Canceled
- Canceled with Warning

 Note

Only transaction data from a task with a *Completed* status can be changed.

6.10.8 Deletion of Credit Card Storage

You may be required to delete credit card data, for example, if credit card information is outsourced or in order to improve your PCI-DSS compliance. Once TLOG transactional data has been archived, SAP POS DM assumes that the old credit card information is no longer accessible and that it will be deleted eventually. The process deleting old credit card information takes approximately two years as the old data is overwritten by the new data.

The `RCCSECV_DATA_DEL` SAP standard report from the `CCSECV_DATA_DEL` transaction allows you to delete unused, encrypted credit card data. By default, credit card data is considered unused when it has not been used in a report or transaction for a minimum of 500 days.

If you have any existing transactions that contain credit card information without an assigned security level, you can use the `/POSDW/PCAM` transaction to migrate it.

6.10.9 Archiving

Only masked credit card information can be archived. Clear text credit card information must not be archived. Archiving encrypted credit card information is problematic because archived data must remain unchanged. PCI-DSS requires that encrypted credit card information be re-encrypted with a different key, for example, with key rotation. However, it is not possible to change data in this way in an archive.

Archiving must be disabled on applications and transactions that do not retain the encryption state of the source data, such as on SAP NetWeaver PI, ABAP Web Services, or Forward Error Handling (FEH). IDocs that contain credit card information must not be archived. The following IDocs are affected because they may contain credit card information:

`WPUBON` - POS interface: Upload sales docs (receipts) non-aggregated

`WPUTAB` - POS interface: Upload day-end closing POS

`WPUFIB` - POS interface: Upload Fin.Acc. interface SRS/POS

`/POSDW/POSTR_CREATEMULTIPLE` - PIPE: BAPI for Creating Several POS Transactions

You use the `CA_PCA_SEC` archiving object to archive the encrypted credit card numbers.

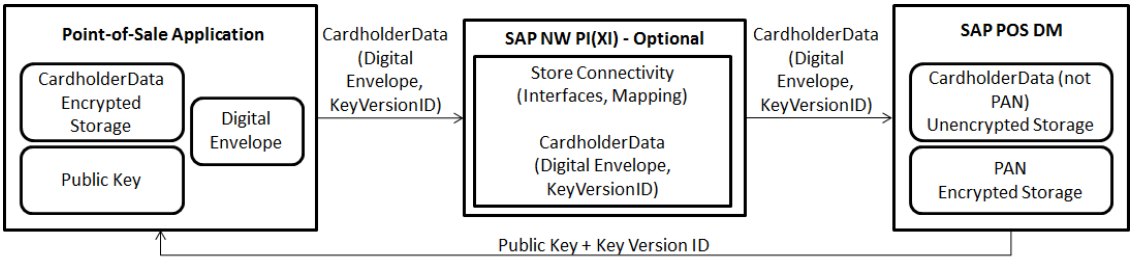
You use the following objects to archive TLOG transaction data (which may also contain credit card information):

`/POSDW/TL`, for SAP POS DM installations on SAP NetWeaver BW with a traditional database, or

`/POSDW/TLF`, for SAP POS DM installations on SAP NetWeaver BW powered by SAP HANA

6.10.10 Interfaces for IDoc/Services

In a typical SAP POS DM landscape, credit card information is communicated as follows:



See the Credit Card Usage Overview section for more information.

The following interfaces are available for use:

- Web services `CertificateByApplicationQuery_Sync` and `CertificateByApplicationResponse_Sync` are used as a pull mechanism from SAP POS DM.
- Store Connectivity 2.0 or 3.0 can optionally be used to map the encrypted data container to the SAP POS DM inbound proxy.

  The interface determinations must contain the `POSLog_To_PointOfSaleTransactionERPBulkCreateRequest_In` interface mapping
- The `IDOC_DATA_MAPPER` IDoc for database encryption is called before saving data to the IDoc database and `IDOC_DATA_CRYPTION` IDoc for database decryption is called after reading data from the database.
- The `POSDW/BAPI_POSTR_CREATE` BAPI, the `/POSDW/CREATE_TRANSACTIONS_EXT` remote Function Module and the service inbound interfaces have been enhanced to contain a secured data segment or cipher; they have all been asymmetrically encrypted with `PKCS7`. The decrypted secured data must conform to a defined XML structure and is converted to an internal table for processing later by the `/POSDW/XSLT_SECUREXMLTOTABLE` transformation.

The following IDoc types contain credit card numbers:

- `WPUBON01`:

  Encryption in BAdI function `/POSDW/PCA_IDOC_MAP`

- `WPUTAB01`:

  Encryption in BAdI function `/POSDW/PCA_IDOC_CRYPT`

- `/POSDW/POSTR_CREATEMULTIPLE02`:

  To enable the encryption of the credit card number in the IDoc type, the `CARDGUID` and `ENCTYPE` fields have been added to the `/POSDW/E1BPCREDITCARD` segment of the IDoc basic type.

  IDoc segments cannot store credit card numbers in clear text due to the PCI-DSS compliance. Once an IDoc is being processed within the IDoc Framework, all values are temporarily stored, including the credit card number in clear text format.

  For more information about how to process IDocs that contain credit card information, see: *http://help.sap.com/nw73/ → Security Information → SAP NetWeaver Security Guide → Security Guides for Connectivity and Interoperability Technologies → Security Guide ALE (ALE Applications) → Handling Sensitive Data in IDocs*

6.10.11 RFC Debugging

You must disable RFC debugging when you process credit card information in a productive system. Do not activate the *Set RFC Trace* option in your productive system. If this option is activated, the system will save all RFC call input data in clear text to file. If credit card numbers (including the PAN) are included in calls to a function module, then this data would be stored to the same file. According to PCI-DSS, credit card numbers must be encrypted when stored, therefore if you activate the *Set RFC Trace* option you would no longer be PCI-DSS compliant.

6.10.12 Forward Error Handling

In SAP Customizing, you must disable Forward Error Handling (FEH) for all services that contain credit card numbers.

6.10.13 Card Verification Values

You must not process any asynchronous services that contain a card verification code or card verification value (CVV) data (such as CAV2, CID, CVC2, CVV2). The payload of asynchronous services is persisted in the database until the service is processed, however, PCI-DSS does not allow the persistence of card verification values. Synchronous services can be processed because their payload is not persisted.

Note

In SAP services, these values correspond to the `PaymentCardVerificationValueText` SAP Global Data Type (GDT).

6.11 Services for Security Lifecycle Management

The following services are available from Active Global Support to assist you in maintaining security in your SAP systems.

6.11.1 Security Chapter in the EarlyWatch Alert (EWA) Report

The Security chapter in the EarlyWatch Alert (EWA) report can be used to monitor your system. It informs you when:

- SAP Security Notes have been identified as missing on your system.

  In this case, analyze and implement the identified SAP Notes if possible. If you cannot implement the SAP Notes, the report can provide information to help you decide how to handle each case.

- An accumulation of critical basis authorizations has been detected.

  In this case, verify that the accumulation of critical basis authorizations is okay for your system. If not, correct the situation. If you consider the situation okay, you must still check that there are no significant changes compared to previous EWA reports.

- Standard users with default passwords have been identified on your system.

  In this case, change the corresponding passwords to non-default values.

6.11.2 Security Optimization Service (SOS)

The Security Optimization Service (SOS) can be used for a more thorough security analysis of your system, including:

- Critical authorizations (in detail)
- Security-relevant configuration parameters
- Critical users
- Missing security patches

The SOS is available as a self-service within SAP Solution Manager, as a remote service, or as an on-site service. We recommend you use it regularly (for example, once a year) and in particular after significant system changes or in preparation for a system audit.

6.11.3 Security Configuration Validation

The Security Configuration Validation can be used to continuously monitor a system landscape for compliance with predefined settings, for example, from your company-specific SAP Security Policy. It is primarily used to check configuration parameters, but it also checks critical security properties, such as verifying the existence of a non-trivial Gateway configuration or ensuring standard users do not have default passwords.

6.11.4 Security in the RunSAP Methodology / Secure Operations Standard

The E2E Solution Operations Standard Security service provides a best practice recommendation on how to operate SAP systems and landscapes in a secure manner. It guides you through the most important security operation areas and provides links to detailed security information from SAP's knowledge base wherever appropriate.

6.11.5 Additional Information

For more information about these services, see the following links

- EarlyWatch Alert: *http://service.sap.com/ewa*
- Security Optimization Service / Security Notes Report: *http://service.sap.com/sos*
- Comprehensive list of Security Notes: *http://service.sap.com/securitynotes*
- Configuration Validation: *http://service.sap.com/changecontrol*
- RunSAP Roadmap, including the Security and the Secure Operations Standard: *http://service.sap.com/runsap* (See the RunSAP chapters 2.6.3, 3.6.3 and 5.6.3)

6.12 Security-Relevant Logging and Tracing

SAP POS DM relies on the logging and tracing mechanisms of SAP NetWeaver.

For more information on tracing and logging, see: *http://help.sap.com/nw73/* → *Security Information* → *SAP NetWeaver Security Guide* → *Security Aspects for Lifecycle Management* → *Auditing and Logging*

6.12.1 Logging and Tracing for Customizing Changes

To evaluate changes to the individual SAP POS DM Customizing tables, use the SCU3 transaction to activate the logging of changes to table data.

6.12.2 Logging of Payment Card Number Display

SAP POD DM users with the appropriate authorization, B_CCSEC authorization object, can view complete credit card numbers in clear text in the POS Workbench. When a user displays a payment card number in clear text format, SAP POS DM logs it in an access log. SAP POS DM allows you to perform a trace to determine which user has displayed a particular card number and when. You can make changes to the authorization log using one of the following programs:

Program	Description	Prerequisite
CCSEC_LOG_SHOW	Allows you to evaluate the access to payment card data	Authorization for activity 71 in the B_CCSEC authorization object
RCCSEC_LOG_DEL	Allows you to delete log records that are more than one year old	Authorization for activity 06 in the B_CCSEC authorization object

7 Operation of SAP POS DM 1.0

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 section provides a starting point for managing, maintaining, and running your SAP POS DM application optimally. It contains specific information for various tasks and lists the tools that you can use to implement them.

7.1 Monitoring of SAP POS DM

Monitoring is an essential task in the management of SAP Technology. Monitoring allows you to detect any irregularities or deviations from an ideal business process flow or to detect error situations concerning a core business process at an early stage.

SAP POS DM uses the standard functionality of SAP NetWeaver for monitoring. For more information about standard monitoring tools, see *http://help.sap.com/nw73/* → *System Administration and Maintenance Information* → *Technical Operations Guide* → *Administration Information* → *Technical Operations for SAP NetWeaver* → *Administration of Application Server ABAP* → *Monitoring and Administration Tools for Application Server ABAP*.

The following documents, found on the SAP Community Network, provide details on monitoring your SAP POS DM application with or without the use of the SAP Solution Manager:

Document	Description
Manage Operations for SAP for Retail: POS Inbound	Contains information on setting up a Business Process Monitoring concept for your POS Inbound process.
Manage Operations for SAP POS Data Management - POS Analytics Content	Contains information on setting up a Business Process Monitoring and error handling concept for SAP POS DM and POS Analytics Content.

7.1.1 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 POS DM as quickly as possible.

7.1.1.1 Monitoring Installation and Setup

To enable the auto-alert mechanism of Computing Center Management System (CCMS), see SAP Note 617547.

7.1.2 Detailed Monitoring and Tools for Problem and Performance Analysis

The following functions are available within SAP POS DM to monitor data flow within the application:

- `/POSDW/LOGS` - SAP POS DM Application Log
- `/POSDW/DISPLAY_MESSAGELOG` - SAP POS DM Message Log
- `/POSDW/DISPLAY_MODIFICATIONS` - Auditor Report

7.1.2.1 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/nw73/* → *Application Help* → *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)*.

7.1.2.2 SAP POS DM Message Log

The SAP POS DM 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.

7.1.2.3 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.

For more information, see the application help.

7.1.2.4 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, created by/on, etc. Each log in the database also includes the attributes *Object* and *Subobject*. These attributes are used describe and classify the application that wrote the log.

Important Log and Trace Files of SAP POS DM

Object	Sub-object	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

For more information, see the SAP Library Help at *http://help.sap.com/nw73/ → Application Help → 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)*

7.1.2.5 Data Growth and Data Archiving Monitors

The following are the fastest growing tables in SAP POS DM:

Technical Name of Table	Description
/POSDW/TLOGS	POS Transaction Database for Small Transactions (for SAP POS DM installed on SAP NetWeaver BW on a traditional database (RDBMS))
/POSDW/TLOGF	Transaction Log Flat table (for SAP POS DM installed on SAP NetWeaver BW powered by SAP HANA)
/POSDW/TLOGF_EXT	Transaction Log Extensions
/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
/POSDW/TSTAT	Areas of Task Status
/POSDW/NAVIX	Navigation Index for Store and Day

/POSDW/AGGR	POS Aggregate

When SAP POS DM is installed on SAP NetWeaver BW powered by SAP HANA, 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 POS DM 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/TL (or /POSDW/TLF for SAP POS DM installed on SAP NetWeaver BW powered by SAP HANA).

The following SAP Notes relate to data growth and archiving in the SAP POS DM:

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

For more information regarding the standard archiving tools, see the SAP Library Help at *http://help.sap.com/nw73/* → *Application Help* → *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.*

7.1.2.6 Data Load After a Reboot of an SAP NetWeaver BW Powered by SAP HANA System

When you reboot an SAP NetWeaver BW powered by SAP HANA system, all data that was stored in-memory is unloaded from memory to disk storage, and must be reloaded from the permanent persistency layer of the SAP HANA database. After the reboot, the first time you run the SAP POS DM application, you may experience significant delays as the SAP POS DM 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 SAP POS DM tables with high disk space usage:

- immediately following the reboot of your SAP NetWeaver BW powered by SAP HANA system, and
- prior to launching the SAP POS DM application.

First, you must identify which tables use the most memory. Refer to the Data Growth and Data Archiving Monitors section.

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 BW 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.
```

7.1.3 Data Consistency

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:

- When the editor is started for a specific POS transaction within the POS Workbench
- When POS transactions are created
- When tasks are processed

The system checks for POS transaction data and automatically enhances it with further data. If there is no POS transaction 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 guidelines prescribed by which checks were already performed.

You can also check transaction data when executing processing tasks using rules you created in Customizing for POS Inbound Processing. 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.

7.2 Management of SAP POS DM

SAP provides an infrastructure to help your technical support consultants and system administrators manage all SAP components, as well as complete all technical administration and operation tasks.

For more information on the underlying technology, see http://help.sap.com/nw73/ → *System Administration and Maintenance Information → Technical Operations Guide*.

7.2.1 Starting and Stopping

When you start SAP NetWeaver, you start the system database, the application servers, and the respective processes of which the system consists.

For more information on starting and stopping SAP NetWeaver based systems, see http://help.sap.com → *SAP NetWeaver → SAP NetWeaver 7.0 (including Enhancement Package 2) → SAP NetWeaver 7.0 → System Administration and Maintenance Information → Technical Operations Guide (English) → General Administration Tasks → Starting and Stopping SAP NetWeaver ABAP and Java*.

7.2.2 Backup and Restore

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 POS DM is based on SAP NetWeaver technology, therefore the SAP NetWeaver backup procedures can also be used for SAP POS DM. For more information on 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/ → *SAP NetWeaver → SAP NetWeaver 7.0 (including Enhancement Package 2) → SAP NetWeaver 7.0 → System Administration and Maintenance Information → Technical Operations Guide (English) → Technical Operations Manual for SAP NetWeaver.*

You can also refer to the Backup and Restore for SAP Systems Landscapes guide, available on the Service Marketplace at http://service.sap.com/alm-methodologies → Best Practice Documents.

7.2.3 Load Balancing

SAP POS DM uses the standard functionality of SAP NetWeaver for logon and load balancing. For more information, see the Technical Operations Manual for SAP NetWeaver at *http://help.sap.com/* → *SAP NetWeaver* → *SAP NetWeaver 7.0 (including Enhancement Package 2)* → *SAP NetWeaver 7.0 Library* → *English* → *SAP NetWeaver Library* *Administrator's Guide* → *Technical Operations Manual for SAP NetWeaver* → *General Administration Tasks* → *High Availability* → *Network High Availability* → *Web Server Networks and DMZs*.

7.2.4 Partitioning – SAP HANA Database

For information on partitioning on the SAP HANA Database, see the SAP Note 1719282.

7.3 Operations - POS Analytics

This section describes how to activate the BI content that is part of the POS Analytics in the `0RT_PA` InfoArea.

The Business Content for POS Analytics provides efficient uploading of POS data to the SAP BI using an inbound interface, storage of the receipt data, and creation of reports for the following areas:

- Store/Article Analytics
- Receipt Analytics
- Event Analytics
- Cashier Analytics

7.3.1 Installation prerequisites

Before installing this building block, you require the following information regarding the BW:

- Host name / IP Address
- System ID
- System Number
- Client
- User ID
- Password

7.3.2 Activation of BI Content

7.3.2.1 Install and Activate the POS DM Datasources

Note

To install the required POS Analytics datasources, you must activate the datasources in the BI and in the ERP. You activate the datasources in the same BW because the PIPE is physically embedded in the BI.

You must install and activate the following master data and datasources:

POS Analytics Master Data	Description
0RT_PA_GMR_TEXT	Goods Movement Reason Text
0RT_PA_DRG_TEXT	Group for Discount Reason Text
0RT_PA_GOG_TEXT	Group for Goods Movement Reasons Text
0RT_PA_RRG_TEXT	Group for Reasons Text
0RT_PA_RRC_TEXT	Reason Text
0RT_PA_DRC_TEXT	Reason for Discount Text
0RT_PA_EVENT	Retail Event
0RT_PA_EVENT_TEXT	Retail Event Texts

You must install and activate the following datasources:

POS Analytics DataSources	Description
0RT_PA_TRANS_GDS_MOV	Goods Movements
0RT_PA_TRAN_MOV_FIN	Financial Transactions
0RT_PA_TRAN_CONTROL	Sales Transactions and Test Transactions
0RT_PA_TRAN_TOTALS	Totals Records
0RT_PA_TRAN_CON_REM	Sales and Test Transaction – Direct Access

7.3.2.2 Install and Activate the POS Analytics Key Figure and Characteristic Catalogues

You must install the following POS Analytics Key Figure and Characteristic Catalogues:

POS Analytics Key Figure and Characteristic Catalogues	Description
0RT_PA_IO_CHA	Collection of Characteristics POS Analytics
0RT_PA_IO_KYF	Collection of Key Figures POS Analytics

7.3.3 Prerequisite

Prior to installing the POS Analytics Key Figure and Characteristic Catalogues, you must install SAP Note 1139547 using BI Content 703 on patch level 0009.

7.3.3.1 Install and Activate the InfoCubes from the POS Analytics BI Content

You must install and activate the following InfoCubes from the POS Analytics BI Content:

InfoCubes from BI Content	Description
0RPA_BONI	POS Receipt Index
0RPA_C01	Store/Article/Day
0RPA_C02	Store/Article/Week
0RPA_C03	Store/Article/Month
0RPA_C05	Cashier Statistics
0RPA_C06	Transaction Count
0RPA_C21	POS DM Day
0RPA_C22	POS DM Week

7.3.3.2 Install and Activate the MultiCubes

You must install and activate the following MultiCubes:

MultiCubes	Description
0RPA_MBON	POS Receipt Index
0RPA_MC01	MultiCube Store/Article/Day
0RPA_MC02	MultiCube Store/Article/Week
0RPA_MC03	MultiCube Article/Month
0RPA_MC05	MultiCube Cashier Statistics
0RPA_MC21	MultiProvider POS DM Day
0RPA_MC22	MultiProvider POS DM Week
0RPA_MC23	MultiProvider for Inactive PLU

7.3.3.3 Install and Activate the InfoSources

You must install and activate the following InfoSources:

InfoSource	Description
0RT_PA_TRAN_CONTROL_TR	Retail Control
0RT_PA_TRAN_GDS_MOV_TR	Goods Movement
0RT_PA_TRAN_MOV_FIN_TR	Financial Movement
0RT_PA_TRAN_TOTALS_TR	Transaction Totals
0RPA_MAT_TXC	Transaction Count

7.3.3.4 Install and Activate the Transformations

You must install and activate the following Transformations:

Transformation
TRCS 0RT_PA_TRAN_CONTROL_TR > CUBE 0RPA_BONI
TRCS 0RT_PA_TRAN_CONTROL_TR > CUBE 0RPA_C22
TRCS 0RT_PA_TRAN_CONTROL_TR > CUBE 0RPA_C05
TRCS 0RT_PA_TRAN_TOTALS_TR > CUBE 0RPA_C05
TRCS 0RT_PA_TRAN_CONTROL_TR > CUBE 0RPA_C01
TRCS 0RT_PA_TRAN_CONTROL_TR > CUBE 0RPA_C03
TRCS 0RT_PA_TRAN_CONTROL_TR > CUBE 0RPA_C02
TRCS 0RPA_MAT_TXC > CUBE 0RPA_C06
TRCS 0RT_PA_TRAN_CONTROL > TRCS 0RPA_MAT_TXC

7.3.3.5 Install and Activate the POS Analytics BI Content Queries

Once you have executed this procedure, you will have activated the POS Analytics BI Content. The six basic InfoCubes and their associated MultiProviders will be connected to the PIPE via the InfoSources 0RT_PA_TRAN_CONTROL and 0RT_PA_TRAN_TOTAL.

You must activate the following Queries:

BI Content Queries
0RPA_MC01_Q0001
0RPA_MC01_Q0002
0RPA_MC01_Q0003
0RPA_MC01_Q0004
0RPA_MC02_Q0001
0RPA_MC02_Q0002
0RPA_MC02_Q0003
0RPA_MC03_Q0001
0RPA_MC03_Q0002
0RPA_MC03_Q0003
0RPA_MC03_Q0004
0RPA_MC05_Q0002
0RPA_MC05_Q0010
0RPA_MC05_Q0011
0RPA_MC05_Q0014
0RPA_MBON_Q0001

7.3.3.6 Mandatory InfoObjects for SAP Note 732579

As per SAP Note 732579, if you have created your own InfoObjects, you can only change the following InfoObjects:

InfoObjects	Description
0MATERIAL	Material
0EANUPC	European Article Numbers/Universal Product Code
0RPA_MEAN	European Article Number Assignment to Article
0RPA_MARM	Units of Measure for Article
0PLANT	Plant
0MAT_PLANT	Material Plant View


Note

The info objects 0RPA_MARM and 0RPA_MEAN must be assigned to an info area. If they are not, you must assign them to the 0RT_PA info area.

If you have activated the above-listed InfoObjects, you must activate the following InfoObjects:

InfoObjects	Description
0RPA_DISQU	Unit of Measure for Display
0RPA_UMREZ	Counter for Conversion of Base Unit of Measure
0RPA_UMREN	Denominator for Conversion of Base Unit of Measure
0MATL_GROUP	Material Group
0BASE_UOM	Base Unit of Measure
0RPA_MVF	Valuation Factor for Average Cost Value
0RPA_CURUOM	Currency Unit Basis for Moving Average Valuation Factor

For more information, see SAP Notes 732579 and 697465.

7.3.3.7 Mandatory Master Data for InfoObjects

You must ensure that the master data for the following InfoObjects is activated:

InfoObject	Description
0COMP_CODE	Company Code for Materials Management
0SALESORG	Sales Organization
0PLANT	Plant
0MATERIAL	Material
0RT_CUSTPL	Customer Plant View

7.3.3.8 MARM and MEAN Delta Extractions for POS Analytics Content

For SAP POS DM, load the master data for the following BI InfoObjects:

InfoObject
0RPA_MEAN
0RPA_MARM

You must use the delta process to load the master data.

You must install SAP Note 835111 before you load the master data for the 0RPA_MEAN and 0RPA_MARM InfoObjects.

7.3.3.9 Installed Notes and Further Information

The following is a list of installed and required notes:

- 1139547 - Transport of InfoObjects RC = 8; follow-on note to 1100575
- 1100575 - InfoObjects: Using units in compounding

- 1150054 - Transformation 0RT_DS53 →0RT_SL_02 cannot be activated
- 835111 - Delta extraction MARM and MEAN for POS Analytics Content
- 732579 - Missing option to use own InfoObjects (2)

7.3.4 Additional Indexing for BI Content InfoObjects (Optional)

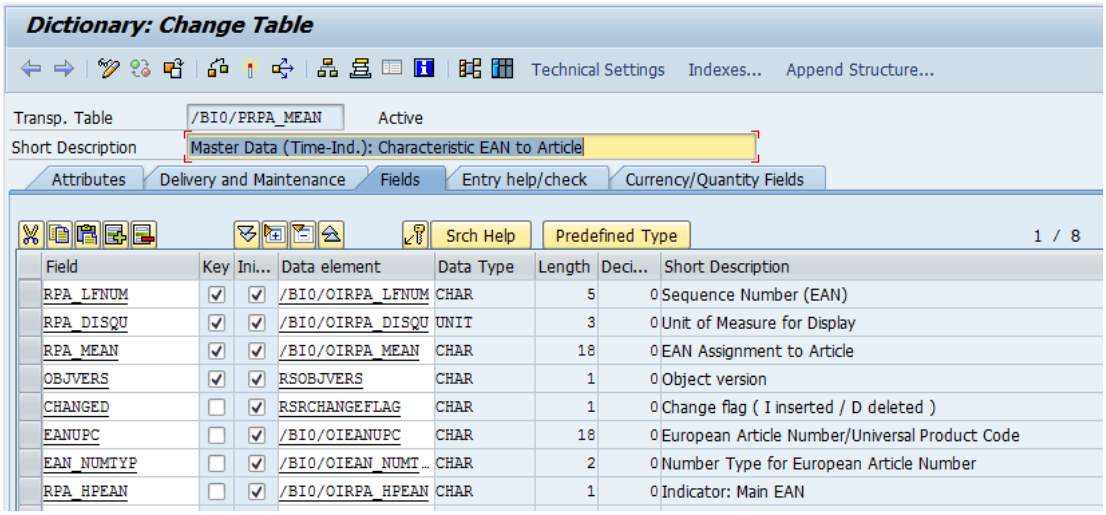
If in your productive implementation of SAP POS DM 1.0 you have very large volumes of master data, you can attempt to increase performance by adding additional (secondary) indexing on some or all of the following BI Content InfoObjects:

InfoObject	Master Data Table Name	Suggested Fields for Additional Indexing
0RPA_MEAN	/BIO/PRPA_MEAN	EANUPC and OBJVERS
0PLANT	/BIO/PPLANT	RT_CUSTPL and OBJVERS
0MATERIAL	/BIO/PMATERIAL	EANUPC and OBJVERS

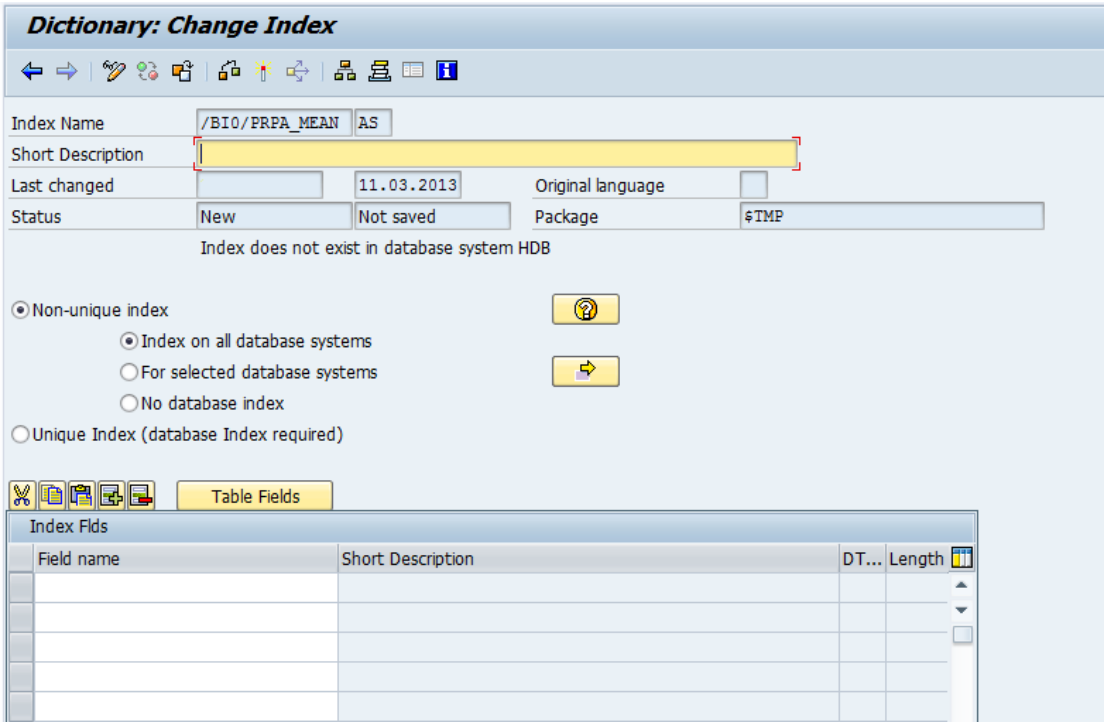
To add additional indexing for an InfoObject, do the following:

1. Use transaction **se11** to open the initial screen of the ABAP Dictionary.
2. Enter the name of a table in the **Database table** field (for example, /BIO/PRPA_MEAN).

   The details for the table are displayed.



3. Use the **Indexes** button to open the **Indices for Table <*Table Name*>** dialog and click on the **Create** button.
4. In the **Create Index** dialog, enter a meaningful name for the index you are creating.
5. In the **Dictionary: Change Index** dialog, enter a short description for your index and select one or more fields of the table to include as the index.



7.4 Operations - Installation and Activation of BI Content for SAP Demand Management Foundation

SAP Demand Management Foundation (DMF) task processing is done within /POSDW/CL_DMF_OUTBOUND, but this class makes use of another BADI for offered information. For the default implementation of BADI /POSDW/DMF_GET_OFFERID in classes /POSDW/CL_DMF_OFFERID_EPOS and /POSDW/CL_DMF_OFFERID_GENERIC, the DataSources and InfoObjects in the following sections must be installed and activated.

7.4.1 InfoObjects for the Material Group List

You must install and activate the following InfoObjects for the Material Group list:

- 0CM_HIEID
- 0CM_MCATDIV
- 0CM_CDT1
- 0CM_CDT2
- 0CM_CDT3
- 0CM_CDT4
- 0CM_CDT5
- 0CM_CDT6
- 0CM_CDT7
- 0CM_SKU
- 0RF_SKU
- 0RT_DS01

7.4.2 InfoObjects for Promotion

You must install and activate the following DataSources for Promotion:

- 0RT_PROMO
- 0RT_DS08:

You must install and activate the following InfoObjects within DataSource 0RT_DS_08:

- 0CM_HIED
- 0CM_SKU
- 0RF_SKU
- 0RT_PROMO
- 0RT_PROFFER
- 0RT_PROTYPE
- 0RT_PROFCON
- 0RT_PROMOTH
- 0RT_PRGTCON
- 0RT_BONBUY
- 0RT_PROFONE
- 0RT_PROFSTA
- 0RT_PROFRMI
- 0RT_PROFRMA
- 0RT_PROFRCU

You must install and activate the following DataSource:

- 0RT_DS09

You must install and activate the following InfoObjects within DataSource 0RT_DS09:

- 0RT_PROMO (also installed and activated for DataSource 0RT_DS08)
- 0RT_PROFFER (also installed and activated for DataSource 0RT_DS08)
- 0RT_PRPGCAT
- 0RT_PRPRGRP
- 0RT_PRPGTYP
- 0RT_OBJCONT
- 0CM_HIEID (also installed and activated for the Material Group List)
- 0RT_SEASON
- 0RT_SEASYR
- 0PRICE_UNIT
- 0COND_UNIT
- 0RT_QTYSUOM
- 0SALES_UNIT
- 0RT_PRPRICE
- 0RT_PRDCAMT
- 0RT_PRDCPCT
- 0CURRENCY
- 0RT_PRBGSUM
- 0RT_PROFQQU

You must install and activate DataSource 0RT_DS10.

You must install and activate the following InfoObjects for DataSource 0RT_DS10:

- 0RT_PROMO (also installed and activated for DataSource 0RT_DS08)
- 0RT_PROFFER (also installed and activated for DataSource 0RT_DS08)
- 0RT_PRPGCAT (also installed and activated for DataSource 0RT_DS09)
- 0RT_PRPRGRP (also installed and activated for DataSource 0RT_DS09)
- 0RT_PRPGTYP (also installed and activated for DataSource 0RT_DS09)
- 0RT_LFDNR
- 0MATERIAL
- 0RT_QTYSUOM (also installed and activated for DataSource 0RT_DS09)
- 0SALES_UNIT (also installed and activated for DataSource 0RT_DS09)

7.5 Operations - POS In-Memory Analytics Content

This section describes how to activate the POS In-Memory Analytics content, available when SAP POS DM is installed on SAP NetWeaver BW powered by SAP HANA. The POS In-Memory Analytics content consists of:

SAP POS DM HANA Content and

Internal BI Content.

7.5.1 SAP POS DM HANA Content

The SAP POS DM HANA Content is comprised of four HANA analytic views. The HANA analytic views are contained in the **`*.tgz`** file that you download from the SAP Service Marketplace.

You must install and activate the following SAP POS DM HANA Analytic Views:

HANA Analytic Views
AN_COUNT
AN_MARKDOWN_SALES
AN_SALES
AN_SALES_COUNT

For more information, see the SAP POS DM application help located at *https://help.sap.com/viewer/p/SAP_POS_DATA_MANAGEMENT* → *Application Help*.

7.5.1.1 Preconfiguration

Set Credentials

You preconfigure your system for the POS In-Memory Analytics content.

To preconfigure your system:

1. Open **<Your System Name>** in the SAP HANA database studio.
2. From the Navigator context menu, select **Add**.
3. Enter the **<Host Name>** and choose **Next**.
4. Enter your credentials and choose **Next**.
5. Open the *Configuration* tab page in the SAP HANA database studio.
6. For the **daemon.ini** configuration file, expand the *scriptserver* section and ensure that the scriptserver instances are set to 1 as described in SAP Note 1650957.
7. For the **indexsserver.ini** configuration file, ensure that in the Repository, the content vendor is set to `sap.com`.

7.5.1.1.2 Change the sqlscript_mode Mode

To allow SQL scripts execute any read/write procedures, set the **sqlscript_mode** to **Unsecure**.

Give Analytical Views Permission to use the Database Schema

To give the analytical views the permission to read and modify the tables of the database schema used by SAP NetWeaver, you must give *Read*, *Insert* and *Delete* privileges to user **_SYS_REPO** as described in SAP Note 1612696.

7.5.1.2 Download SAP POS DM HANA Content

You can download the SAP POS DM HANA content from the SAP Service Marketplace. Download the SAP POS DM HANA Content ***.tgz** file as described in SAP Note 1720277.

7.5.1.3 Install SAP POS DM HANA Content

To install SAP POS DM HANA Content:

1. Open SAP HANA database studio.
2. From the *File* menu, choose *Import* → *SAP HANA Content* → *Delivery Unit*.
3. Choose *Next*.
4. In the *Systems to Import* list, choose the system that you want to import to.
5. Choose *Next*.
6. In the *Import File* window, choose *Client*.
7. Browse to locate the **`*.tgz`** file with the SAP POS DM HANA Content that you downloaded.
8. The imported SAP POS DM HANA Content is added to the *Content* folder and should activate automatically. However, if the analytic views to do not activate automatically, proceed to the next procedure: Activate SAP POS DM HANA Content.
9. Choose *Finish*.

7.5.1.4 Activate SAP POS DM HANA Content

To activate the SAP POS DM HANA Content:

1. In the SAP HANA database studio *Navigator* window, expand the system for which you want to activate the views.
2. Expand the *Content* folder.
3. Expand the package hierarchy by choosing *sap* → *is* → *retail* → *posdm*.
4. Right-click on the *posdm* folder and choose **`Activate`**.

You can activate views individually: right-click on the view that you want to activate and choose the **`Activate`** option.

7.5.2 Internal POS In-Memory Analytics BI Content

The following sections list the SAP POS DM POS Analytics Content that you must install and activate.

7.5.2.1 Install and Activate BI Content Key Figure and Characteristic Catalogues

You must install and active the following BI Content Key Figure and Characteristic Catalogues:

Catalog	Description
0RT_PDM_SAD_CHA	Collection of characteristics for the Sales Analysis Dashboard
0RT_PDM_SAD_KEYFIG	Collection of key figures for the Sales Analysis Dashboard

7.5.2.2 Install and Activate the Characteristics

You must install and activate the following Characteristics:

Characteristic	Description
0RPM_DAY	Calendar Day
0RPM_MTH	Calendar Month
0RPM_WEK	Calendar Week
0RPM_YER	Calendar Year
0RPM_HOR	Hour
0RPM_RSI	Customer Number of Plant/Store
0RPM_ITI	Item ID
0RPM_IQU	Item Qualifier
0RPM_MARK	Markdown Sales Transaction
0RPM_MATGRP	Material Group
0RPM_OFFER	Offer
0RPM_PROMO	Promotion
0RPM_RRC	Reason
0RPM_QUALIF	Record Qualifier
0RPM_RTC	Retail Type Code
0RPM_TTC	Transaction Type Code
0RPM_ALLKEY	Retailstrid, Bussdaydate & TransIndx
0RPM_BTS1	Start Date
0RPM_BTS2	Start Time Stamp (Time)
0RPM_RIC	Category

0RPM_RISC	Sub Category

7.5.2.3 Install and Activate Key Figures

You must install and activate the following Key Figures:

Key Figure	Description
0RPM_COUNT	Counter
0RPM_REA	Discount Value
0RPM_DID	Distributed Discount
0RPM_NSA	Normal Sales Value
0RPM_TXI	Tax Included
0RPM_DITXI	Distributed Tax

7.5.2.4 Install and Activate the InfoCubes for the InfoProviders

You must install and activate the following InfoCubes for the InfoProviders:

InfoCube	Description
0RPM_VP02	Sales
0RPM_VP06	Markdown Sales Transactions
0RPM_VP07	Number of Transactions
0RPM_VP08	Average Sales per Transaction
0RPM_VP09	Average Number of Items per Transaction

7.5.2.5 Install and Activate the MultiCubes for the MultiProviders

You must install and activate the following InfoCubes for the InfoProviders:

InfoCube	Description
0RPM_MC02	Sales
0RPM_MC06	Markdown Sales Transactions
0RPM_MC07	Number of Transactions
0RPM_MC08	Average Sales per Transaction
0RPM_MC09	Average Number of Items per Transaction

7.5.2.6 Install and Activate the Queries

You must install and activate the following Queries:

BEx Query	Description
0RPM_VP02_Q0001	Sales Summary
0RPM_VP02_Q0010	Gross Sales Summary
0RPM_VP02_Q0011	Gross Sales Rolling Time Period Trend
0RPM_VP02_Q0012	Gross Sales Top Location Performers
0RPM_VP02_Q0013	Gross Sales Bottom Location Performers
0RPM_VP02_Q0014	Gross Sales Top Department Performers
0RPM_VP02_Q0015	Gross Sales Bottom Department Performers
0RPM_VP02_Q0016	Departments Gross Sales for a given Location and Items Gross Sales for a given Department
0RPM_VP02_Q0020	Net Sales Summary
0RPM_VP02_Q0021	Net Sales Rolling Time Period Trend
0RPM_VP02_Q0022	Net Sales Top Location Performers
0RPM_VP02_Q0023	Net Sales Bottom Location Performers
0RPM_VP02_Q0024	Net Sales Top Department Performers
0RPM_VP02_Q0025	Net Sales Bottom Department Performers
0RPM_VP02_Q0026	Departments Net Sales for a given Location and Items Net Sales for a given Department
0RPM_VP02_Q0030	Discounts Summary
0RPM_VP02_Q0031	Discount Rolling Time Period Trend
0RPM_VP02_Q0032	Discount Top Location Performers
0RPM_VP02_Q0033	Discount Bottom Location Performers
0RPM_VP02_Q0034	Discount Top Department Performers
0RPM_VP02_Q0035	Discount Bottom Department Performers
0RPM_VP02_Q0036	Department Discount per Location and Items Discounts per Department
0RPM_VP06_Q0060	Net Markdown Sales
0RPM_VP06_Q0061	Net Markdown Sales Rolling Time Period Trend
0RPM_VP06_Q0062	Net Markdown Sales Top Location Performers
0RPM_VP06_Q0063	Net Markdown Sales Bottom Location Performers
0RPM_VP06_Q0064	Net Markdown Sales Top Department Performers
0RPM_VP06_Q0065	Net Markdown Sales Bottom Department Performers

0RPM_VP06_Q0066	Department Net Markdown Sales per Location
0RPM_VP06_Q0067	Items Net Markdown Sales per Department
0RPM_VP07_Q0070	Number of Transactions Summary
0RPM_VP07_Q0071	Number of Transactions Rolling Time Period Trend
0RPM_VP07_Q0072	Number of Transactions Top Location Performers
0RPM_VP07_Q0073	Number of Transactions Bottom Location Performers
0RPM_VP07_Q0074	Number of Transactions Top Department Performers
0RPM_VP07_Q0075	Number of Transactions Bottom Department Performers
0RPM_VP08_Q0080	Average Sale per Transaction
0RPM_VP08_Q0081	Average Sale per Transaction Rolling Time Period Trend
0RPM_VP08_Q0082	Average Sale per Transaction Top Location Performers
0RPM_VP08_Q0083	Average Sale per Transaction Bottom Location Performers
0RPM_VP08_Q0084	Average Sale per Transaction Top Department Performers
0RPM_VP08_Q0085	Average Sale per Transaction Bottom Department Performers
0RPM_VP09_Q0090	Average Items Sold per Transaction
0RPM_VP09_Q0091	Average Items Sold per Transaction Rolling Time Period Trend
0RPM_VP09_Q0092	Average Items Sold per Transaction Top Location Performers
0RPM_VP09_Q0093	Average Items Sold per Transaction Bottom Location Performers
0RPM_VP09_Q0094	Average Items Sold per Transaction Top Department Performers
0RPM_VP09_Q0095	Average Items Sold per Transaction Bottom Department Performers

7.6 High Availability

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

You can find general information on high availability strategies for SAP NetWeaver based systems at http://help.sap.com → *SAP NetWeaver* → *SAP NetWeaver 7.3* → *Application*

Help → Function-Oriented View → English → Solution Life Cycle Management → SAP High Availability.

7.7 Support Desk Management

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.

The following topics are covered here:

- Remote support setup
- Problem message handover

7.7.1 Remote Support Setup

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.

7.7.2 Problem Message Handover

To create SAP support messages for your installation, you must specify the software component. For SAP POS DM, you must specify one of the following:

`BW-BCT-ISR` – to enter support messages for POS Analytics on the BI_CONT software component.

`BW-BCT-ISR-PIP` – to enter support messages for PIPE and/or SAP POS DM HANA Content.

8 Solution-Wide Topics

8.1 SAP Solution Manager

SAP recommends using the SAP Solution Manager platform to efficiently support the implementation of your solution. Using SAP Solution Manager significantly accelerates the implementation process and helps you to achieve your business goals. At the same time, SAP can deliver support services based on the business scenarios designed and documented in SAP Solution Manager. Implementation content for your solution may further accelerate the implementation process. For information about availability of content specifically tailored to your solution, see SAP Service Marketplace under **`service.sap.com/solutionmanager`**.

8.2 Service-Oriented Architecture (SOA)

SAP's delivery on SOA (service-oriented architecture) differs from the pure architectural concept of SOA in the delivery of ready-to use enterprise services. Enterprise services are SAP-defined Web services which provide end-to-end business processes or individual business process steps that can be used to compose business scenarios while ensuring business integrity and ease of reuse. SAP designs and implements enterprise service interfaces to ensure semantic harmonization and business relevance. This section deals with the service-enablement of SAP POS DM.

8.2.1 Service Enablement

The service enablement of SAP POS DM consists of one or more of the following SAP components:

- **SAP POS DM**

  Enterprise services are a part of the software components of the SAP POS DM application. Enterprise services are the technical interfaces to the functionality available in the business application.

- **SAP NetWeaver PI 7.0 or higher**

  SAP NetWeaver Process Integration (SAP NetWeaver PI) is an open integration and application platform that provides tools enabling you to set up a service-oriented architecture for business applications. You can use the platform for providing, discovering, and consuming services, integrating applications using the integration server, and managing business processes. Process integration is required in a runtime environment to consume enterprise services in a mediated scenario.

  We recommend that you use the highest version of SAP NetWeaver Process Integration (PI). For more information, see SAP Note 1515223 and SAP Note 1388258.

  Starting with SAP NetWeaver Process Integration (PI) 7.3, SAP provides a new installation option Advanced Adapter Engine Extended (AEX). Since AEX is based on AS Java alone, it is easier to install and maintain as well as it needs less memory and data storage. Therefore, AEX is a cost-saving option compared to a full installation of SAP NetWeaver PI. For more information about the AEX, enter the phrase Advanced Adapter Engine Extended in the documentation of SAP NetWeaver Process Integration under http://help.sap.com/nw73 and see SAP Note 1573180.

Asynchronous services that are enabled for Web Services Reliable Messaging (WS-RM) can be called in a point-to-point communication scenario. Otherwise asynchronous services can only be consumed in a mediated scenario.

- **Enterprise Services Repository**

  The Enterprise Services Repository (ES Repository) is the central repository that contains the definition of all enterprise services and models. The ES Repository is shipped with SAP NetWeaver PI and with SAP NetWeaver Composition Environment (CE) starting with SAP NetWeaver PI 7.1 and with SAP NetWeaver CE 7.1. The Enterprise Services Repository is a design time environment that enables you to create and enhance enterprise service definitions.

  In a SAP NetWeaver 7.0x landscape you use the Integration Repository to create and enhance enterprise service definitions.

- **Services Registry**

  The Services Registry is shipped with SAP NetWeaver PI and SAP NetWeaver CE starting with SAP NetWeaver PI 7.1 and SAP NetWeaver CE 7.1. The Service Registry is only required for the publication of enterprise service end-points (Web services) that have been configured and activated in the SAP POS DM.

- **SAP NetWeaver CE 7.1 or higher**

  The SAP NetWeaver Composition Environment (SAP NetWeaver CE) provides a robust environment for the design and implementation of composite applications.

  The design time environment of SAP NetWeaver CE can be used for the model-driven design and development of composite applications based on enterprise services. SAP NetWeaver CE offers the tools and the environment necessary for running composite applications fast and efficiently in a runtime environment.

8.2.2 Installation of the SOA

The installation of service interfaces, and therefore the service enablement of SAP POS DM, consists of one or more of the following phases:

- Identification of software components and required business functions

  You use the technical data section of the enterprise service documentation to identify the following data for each enterprise service:

  - the software component version with which the service was shipped (use transaction SOAMANAGER in your SAP POS DM system)
  - the business function(s) required to be activated

- Import of ESR Content (aka XI Content) (optional)

  Refer to the SAP NetWeaver PI section for information on installing the XI content.

8.2.3 Related Documentation

For more information about the service-oriented architecture (SOA), see the following information sources:

- SCN Community in the SAP Network at https://scn.sap.com/community/soa (registration required)
- SAP note 838402: Problems with non-Unicode system landscapes

Appendix A 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 POS DM 1.0 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 POS DM 1.0 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

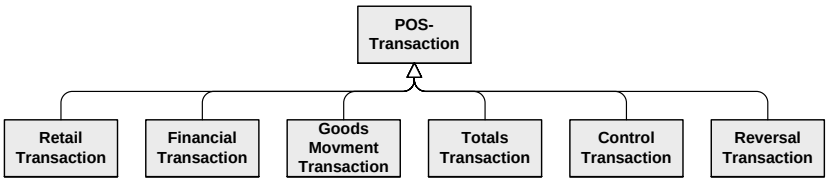
The POS transaction data model is the most important business object in the POS Inbound Processing Engine (PIPE). At the POS, different kinds of business transactions can be recorded by a cash register, for example:

- 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, cashier log on, etc.)

In order to simplify the programming interfaces, the SAP POS DM 1.0 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. 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.



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 in order for SAP POS DM 1.0 to process the data. Some header fields are optional in SAP POS DM 1.0 but are required from a business point of view.

The transaction header contains the following information:

Field Name	Description	Role in SAP POS DM 1.0	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
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 POS DM 1.0 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. This field is mandatory from a business point of view.	Optional Attribute	Key	Char / 10
Transaction Number	A number used to identify a POS transaction. In SAP POS DM 1.0, the key fields (store, business day,	Optional Attribute	Key	Char / 20

	workstation ID, transaction type code, and transaction number) do not need to be unique because SAP POS DM 1.0 uses a counter at the database level. However, the key field combination must be unique at the POS.			
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
End Time Stamp	The date and time the POS transaction was completed. This field is mandatory in SAP POS DM 1.0. 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
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 POS DM 1.0 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

Transaction Header Fields

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 POS DM 1.0 tasks can be configured to filter out voided transactions automatically.

For more information on post void details, see section 0

Post Void Transactions.

Extensions

The POS transaction data model used by SAP POS DM 1.0 includes predefined locations where you can insert extension segments to enhance the standard data model with customer-specific fields.

Extensions may 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.

Transaction 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.

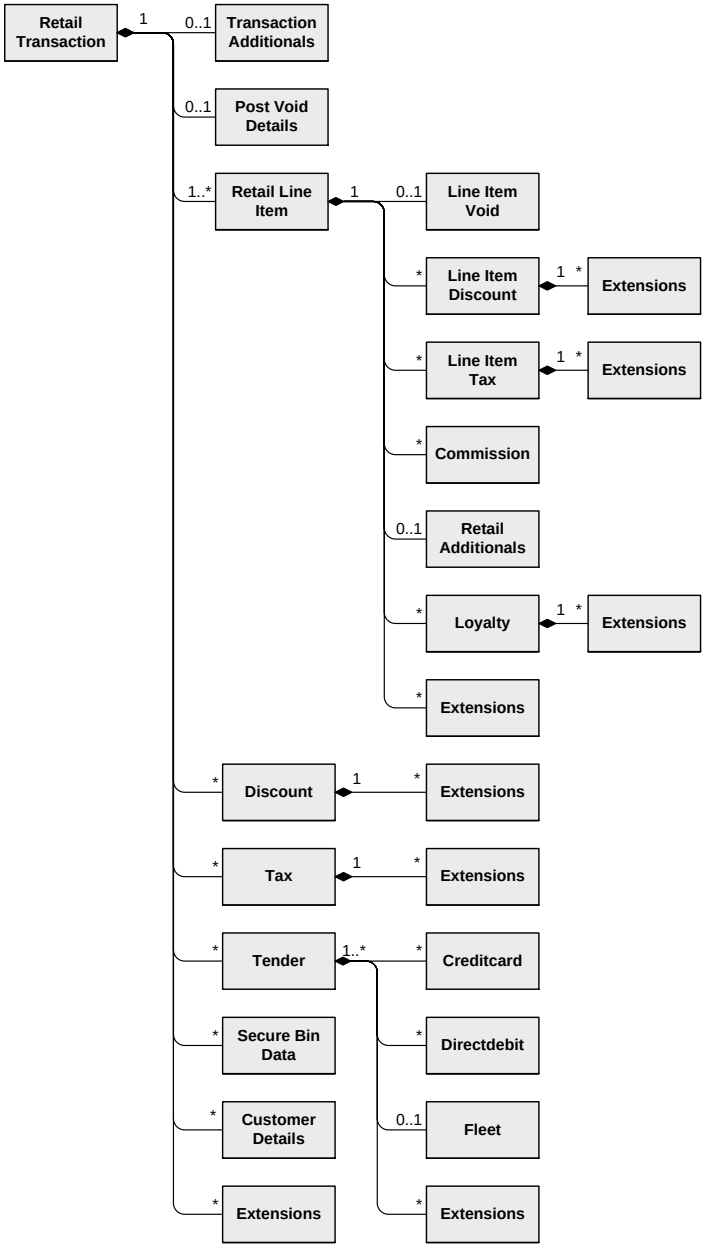
A retail line item reflects a quantity of a single article that was scanned or manually entered at the POS. For each retail line item, there can be discounts, taxes, loyalty information or commission information that applies to it. Depending on the business case or business use, discounts, taxes, and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



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 tender 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

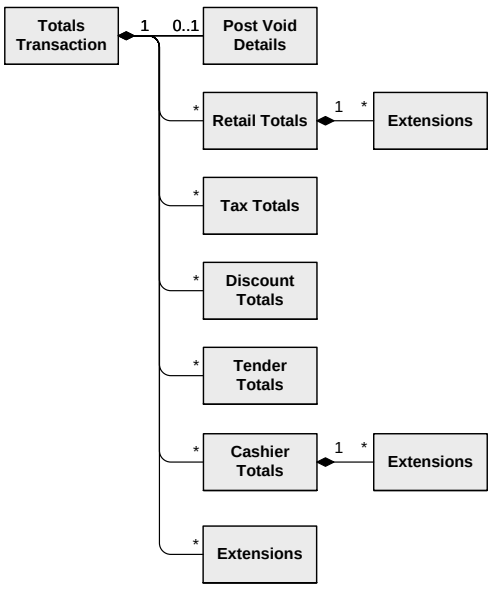
At the end of a day or a cashier shift, the cash register can send a summary record that contains different kinds of totals as described above.

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 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.



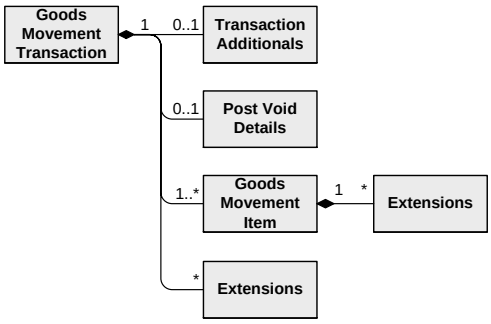
Structure of a Totals Transaction

Goods Movements

Goods movement transactions are used to enter goods movements at the POS. They can be entered for different 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 the other without any kind of settlement
- Reserve goods: A customer can call and ask to reserve an article for pick up the next day. If this transaction is to be reflected on 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.

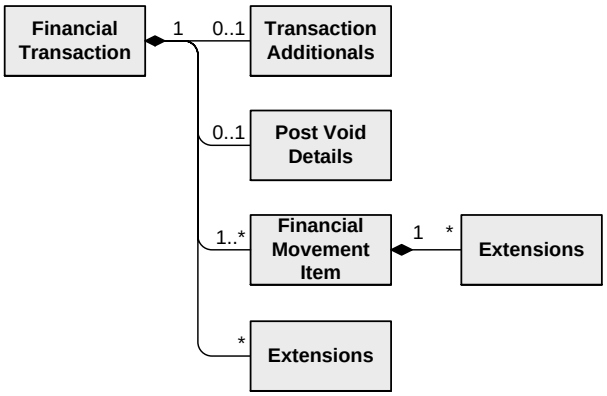


Structure of a Goods Movement Transaction

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, is brought to the bank, or new change is paid-in. In this case, the financial amount is moved within the company.
- Pay-In and Pay-Out Transactions: Money is paid-in, for example, for a service, wages, or a pay-in for a customer order, or money is paid-out, for example, for wages. In this case, the financial amount is moved out of the company or moved in to the company.



Structure of a Financial Movement Transaction

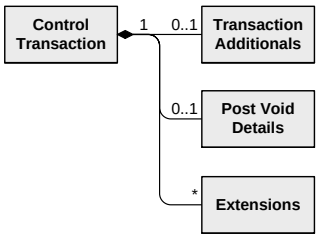
The financial transaction consists of a *transaction header* and a financial movement item, which contains an amount of money to be booked on a certain account.

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 to 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.



Structure of a Control Transaction

Post Void Transactions

Post void transactions represent the reversal of a POS transaction that was previously processed. For several business reasons and in very 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. A post void transaction is a reversal transaction in order to reverse another, earlier transaction.

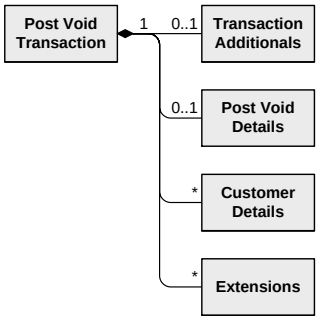
There are two possible post void scenarios:

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 POS DM 1.0 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 latter case, the post void transactions need to be transferred to SAP POS DM 1.0 because the cash register has already marked the original transaction to be “invalid”. If this is technically not possible or we are in case 1, the reversal processing needs to be done in SAP POS DM 1.0.



Post Void Transactions

POS Transaction Tables

When SAP POS DM 1.0 is installed on SAP NetWeaver BW on a traditional database (RDBMS), POS transactions are stored in either the /POSDW/TLOGS or the /POSDW/TLOGL table. The transaction details are stored as Binary Large Objects (BLOBs) in a compressed or uncompressed form.

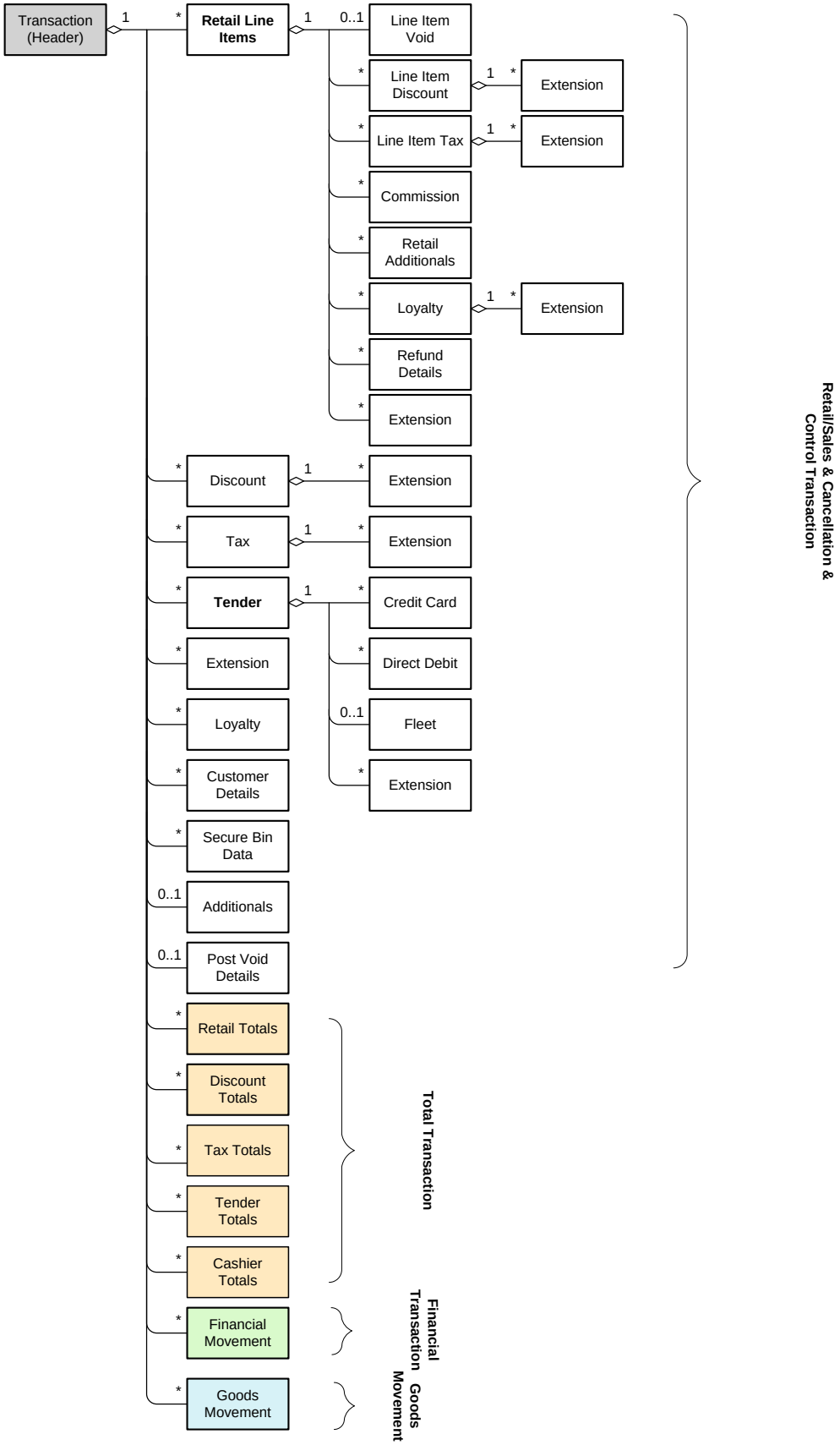
- /POSDW/TLOGS: Is used to store small transactions, that is, transactions that do not exceed 32000 bytes. The transaction header information is stored in regular fields and the details are stored as a BLOB in the TRANSACTIONDATA field.
- /POSDW/TLOGL: Is used to store large transactions, that is, transactions that exceed 32000 bytes. The details area is stored as a BLOB in the TRANSACTIONDATA field. The header information is stored in the /POSDW/TLOGS table using the same key fields. In this situation, the TRANSACTIONDATA field in /POSDW/TLOGS does not contain any data.

Transaction Log Storage when SAP POS DM 1.0 is Installed on SAP NetWeaver BW Powered by SAP HANA for SAP HANA

When SAP POS DM 1.0 is installed on SAP NetWeaver BW powered by SAP HANA for SAP HANA, POS transactions are stored in one table, the `/POSDW/TLOGF` table. The `/POSDW/TLOGF` table has the following characteristics:

- Only persisted 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.)

A new Retail transaction type structure has been developed, shown in Transaction Types Detail and Extension Segments. New segments have been created to store previously unstructured content that is now stored as structured content.


Transaction (Header)
Retail Line Items
Line Item Void
Line Item Discount
Extension
Line Item Tax
Extension
Commission
Retail Additionals
Loyalty
Extension
Refund Details
Extension
Discount
Extension
Tax
Extension
Tender
Credit Card
Direct Debit
Fleet
Extension
Extension
Loyalty
Customer Details
Secure Bin Data
Additionals
Post Void Details
Retail Totals
Discount Totals
Tax Totals
Tender Totals
Cashier Totals
Financial Movement
Goods Movement
Retail/Sales & Cancellation & Control Transaction
Total Transaction
Financial Transaction
Goods Movement

Transaction Types Detail and Extension Segments

/POSDW/TLOGF Table

The /POSDW/TRANSACTION_INT structure is the internal representation of the POS transaction data in the SAP POS DM 1.0 application layer. In the database layer, when SAP POS DM is installed on SAP NetWeaver BW powered by SAP HANA, the POS transaction data is stored in the `/POSDW/TLOGF` table.

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

Flattening the TLOG Data Model into /POSDW/TLOGF

As described in previous sections, POS transactions are stored as a tree structure in the /POSDW/TRANSACTION_INT. The root node of a POS transaction contains header information such as transaction type, transaction number and other fields. These 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 in to 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.

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
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

Record Qualifiers

Extensibility and Extensions

As comprehensive as the SAP POS DM 1.0 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.

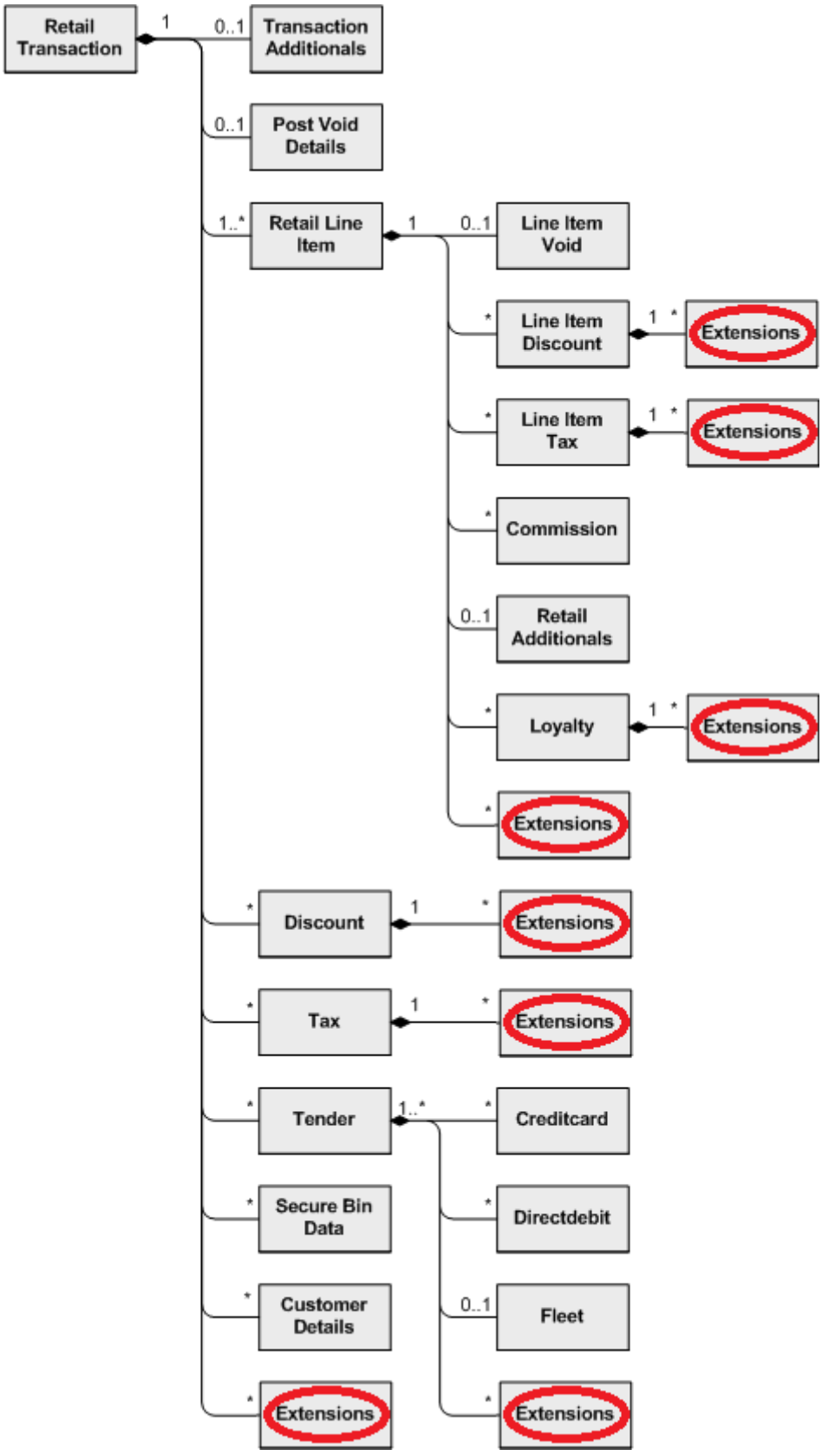
Extensions and the Internal TLOG Structure (/POSDW/TRANSACTION_INT)

The SAP POS DM 1.0 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 the 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		

/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 even lower than the item level. The field names can be grouped in order to reproduce data structures.


Retail Transaction
1
0..1
Transaction Additionals
0..1
Post Void Details
1..*
Retail Line Item
1
0..1
Line Item Void
*
Line Item Discount
1
*
Extensions
*
Line Item Tax
1
*
Extensions
*
Commission
0..1
Retail Additionals
*
Loyalty
1
*
Extensions
*
Extensions
*
Discount
1
*
Extensions
*
Tax
1
*
Extensions
*
Tender
1..*
*
Creditcard
*
Secure Bin Data
*
Directdebit
*
Customer Details
0..1
Fleet
*
Extensions
*
Extensions

Extensions and the Physical Data Storage when SAP POS DM 1.0 Installed on SAP NetWeaver BW on a Traditional Database (RDBMS)

When SAP POS DM 1.0 is installed on SAP NetWeaver BW running on a traditional database, transactions are compressed and stored in binary format (in binary large object database field or BLOBs) in either the /POSDW/TLOGS or the /POSDW/TLOGL table (depending on the overall transaction).

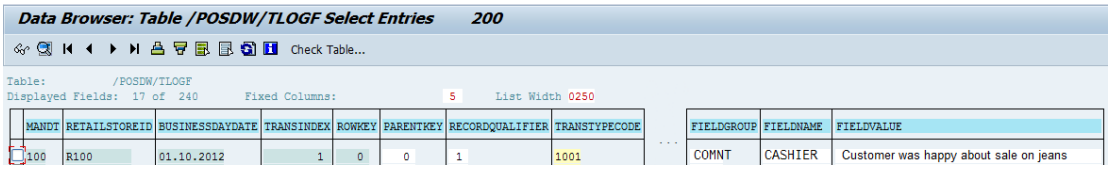
Extensions segments, which are part of a transaction, are stored together with their associated transaction, in the same BLOB.

Extensions and the Physical Data Storage when SAP POS DM 1.0 Installed on SAP NetWeaver BW powered by SAP HANA

When SAP POS DM 1.0 is installed on SAP NetWeaver BW powered by SAP HANA, 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 actual comment, for example, "Customer was happy about sale on jeans".

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



Storing Extensions 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 POS DM administrator. Do not change the selected setting of the *Store Extensions in Separate Table* option needlessly.

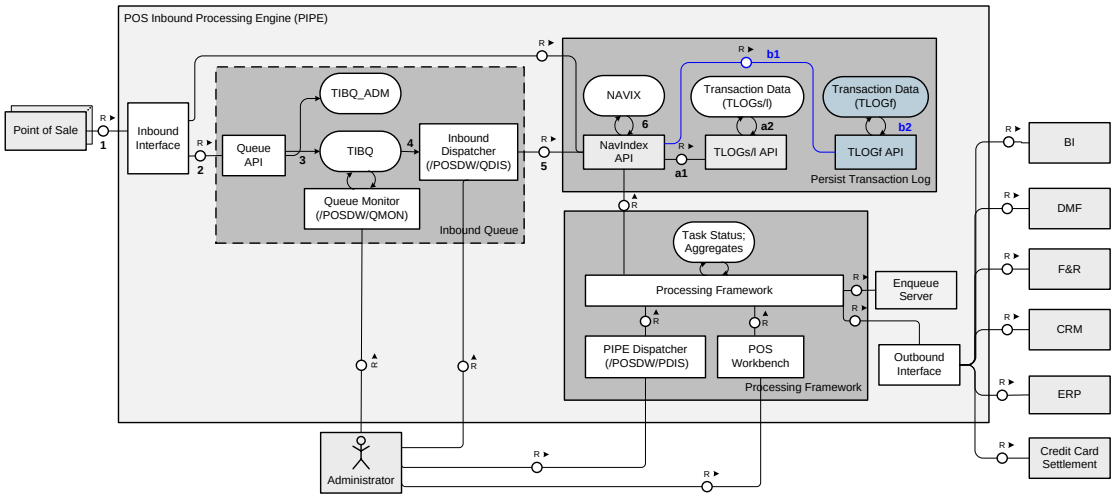
Only transactions processed after the *Store Extensions in Separate Table* option is enabled will have their extension segments stored in the `/POSDW/TLOGF_EXT` table. For all the POS transactions already stored in the `/POSDW/TLOGF` table, you must run the **Transfer POS Transaction Extension Segments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

Persisting POS Data to /POSDW/TLOGF Table

POS data goes through SAP POS DM 1.0 and is persisted in the POS transaction table(s) for sales auditing, and any aggregation and follow-on task processing.



Enhanced SAP POS DM 1.0 Inbound Processing

All POS transaction data flows through steps 1 to step 6, regardless of whether SAP POS DM 1.0 is installed on SAP NetWeaver BW on a traditional database (RDBMS) or SAP NetWeaver BW powered by SAP HANA.

When SAP POS DM 1.0 is installed on SAP NetWeaver BW on a traditional database (RDBMS), POS transaction data goes through step a1 and step a2 to persist the data before it goes to the task processing.

When SAP POS DM 1.0 is installed on SAP NetWeaver BW powered by SAP HANA, POS transaction data goes through step b1 and step b2 to persist the data before it goes to the task processing.

TLOG API

To ensure that a customer's deployment has the corresponding TLOG data model depending on whether SAP POS DM 1.0 is installed on SAP NetWeaver BW on a traditional database (RDBMS) or SAP NetWeaver BW powered by SAP HANA, you must ensure that the following function modules remain as they were in SAP POS DM 1.0:

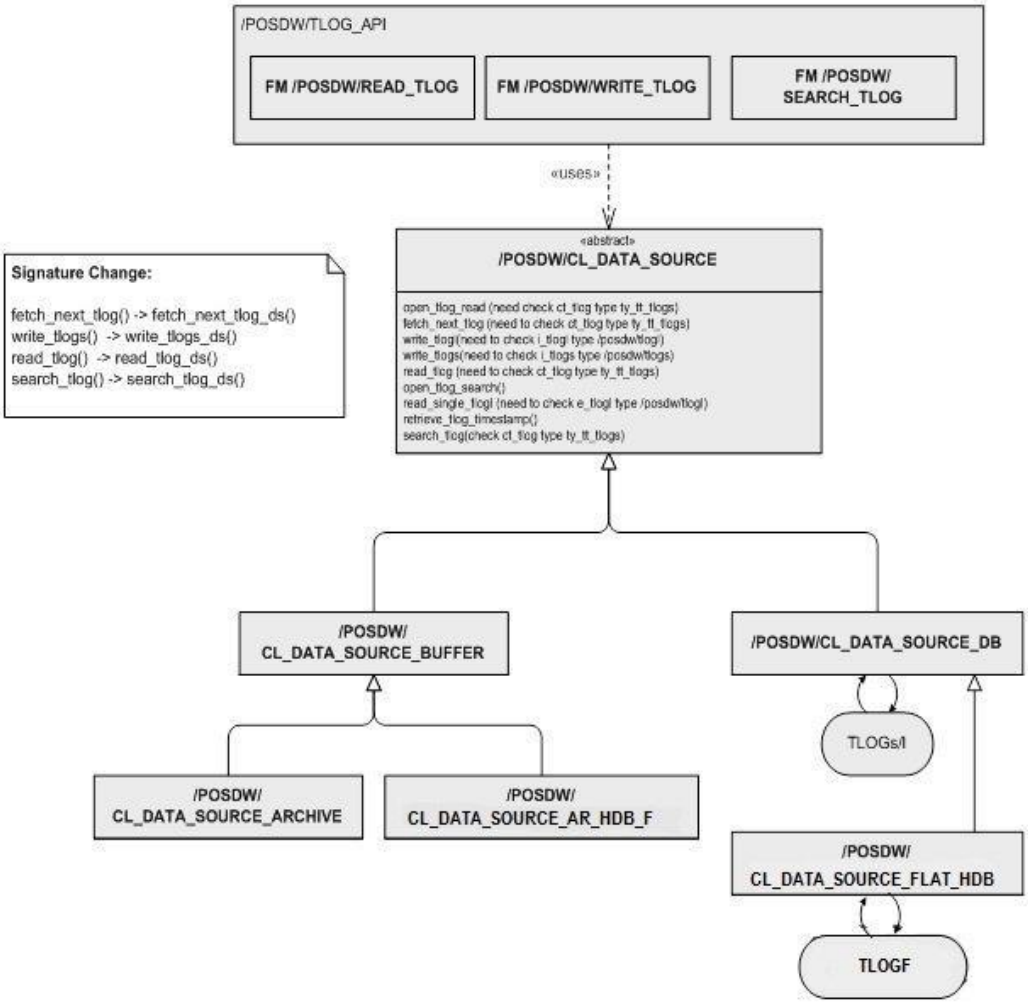
- /POSDW/READ_TLOG
- /POSDW/WRITE_TLOG
- /POSDW/SEARCH_TLOG

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

These three function modules determine the underlying system database and call the corresponding data source to perform the required actions.

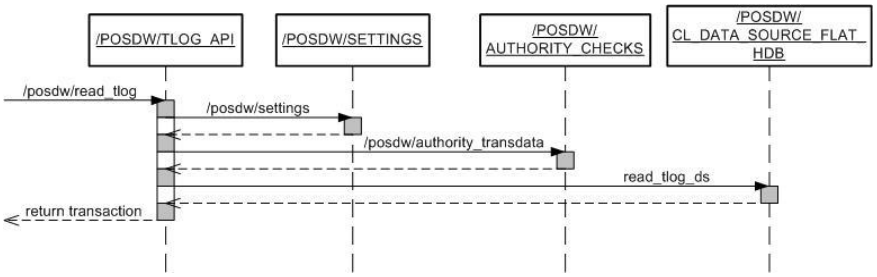
To achieve this, the existing signature of the following four methods in /POSDW/CL_DATA_SOURCE have been modified to not reveal the underlying TLOG data model:

- FETCH_NEXT_TLOG()
- READ_TLOG()
- SEARCH_TLOG()
- WRITE_TLOGS()
- TLOG API

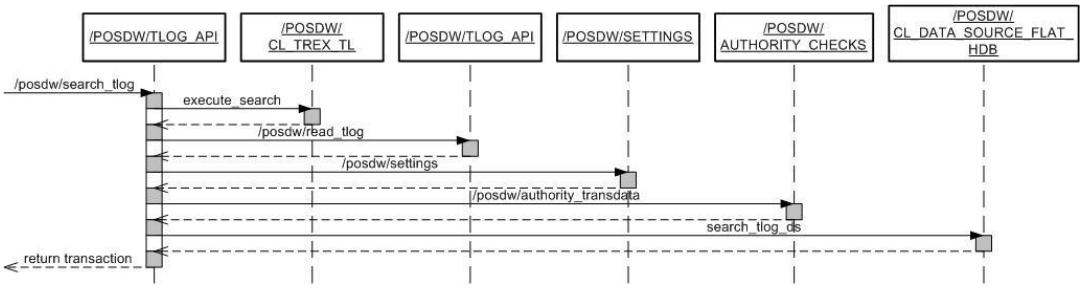

/POSDW/TLOG_API
FM /POSDW/READ_TLOG
FM /POSDW/WRITE_TLOG
FM /POSDW/ SEARCH_TLOG
«USES»
«abstract»
/POSDW/CL_DATA_SOURCE
open_tlog_read (need check ct_tlog type ty_tt_tlogs)
fetch_next_tlog (need to check ct_tlog type ty_tt_tlogs)
write_tlog(need to check i_tlogi type /posdw/tlogi)
write_tlogs(need to check i_tlogs type /posdw/tlogs)
read_tlog (need to check ct_tlog type ty_tt_tlogs)
open_tlog_search()
read_single_tlogi (need to check e_tlogi type /posdw/tlogi)
retrieve_tlog_timestamp()
search_tlog(check ct_tlog type ty_tt_tlogs)
Signature Change:
fetch_next_tlog() -> fetch_next_tlog_ds()
write_tlogs() -> write_tlogs_ds()
read_tlog() -> read_tlog_ds()
search_tlog() -> search_tlog_ds()
/POSDW/ CL_DATA_SOURCE_BUFFER
/POSDW/CL_DATA_SOURCE_DB
TLOGs/I
/POSDW/ CL_DATA_SOURCE_ARCHIVE
/POSDW/ CL_DATA_SOURCE_AR_HDB_F
/POSDW/ CL_DATA_SOURCE_FLAT_HDB
TLOGF

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

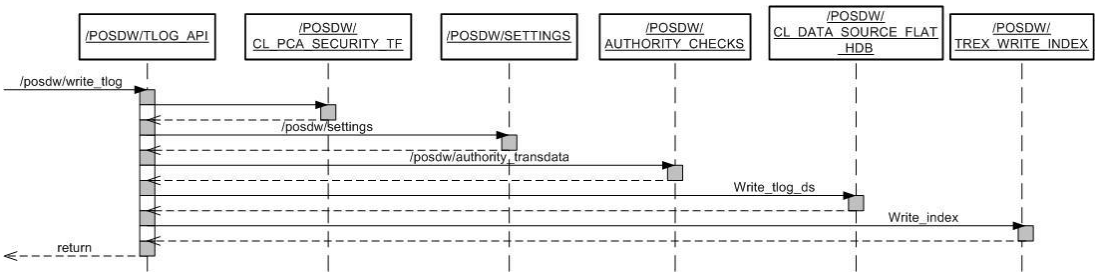
Name	Type	Description
/POSDW/READ_TLOG	Function Module	This function module reads the POS transactions from the POS transaction database.
/POSDW/SEARCH_TLOG	Function Module	This function module searches the POS transaction database for records matching the selection criteria.
/POSDW/WRITE_TLOG	Function 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.



Sequence Diagram for /POSDW/READ_TLOG Operation



Sequence Diagram for /POSDW/SEARCH_TLOG Operation



Sequence Diagram for /POSDW/WRITE_TLOG Operation

Customizing

Currently, C_SOURCE is a changing parameter that is optionally passed to the following TLOG APIs:

- /POSDW/READ_TLOG
- /POSDW/WRITE_TLOG
- /POSDW/SEARCH_TLOG
- /POSDW/FETCH_NEXT_PACKAGE_TLOG
- /POSDW/OPEN_COURSOR_SEARCH_TLOG
- /POSDW/READ_TLOG_STORE_DAY

Inside the function module, c_source is treated as follows:

```
/posdw/cl_data_source=>check_instance( CHANGING c_instance = c_sourc
e ).
```

```
Method  CHECK_INSTANCE                                          A
1  method check_instance.
2    if c_instance is initial.
3      if default_instance is initial.
4        create object c_instance type (default_class).
5      else.
6        c_instance = default_instance.
7      endif.
8    endif.
9  endmethod.
```

If c_source is not passed in or if it is set to initial, an instance of '`default_class`' is created.

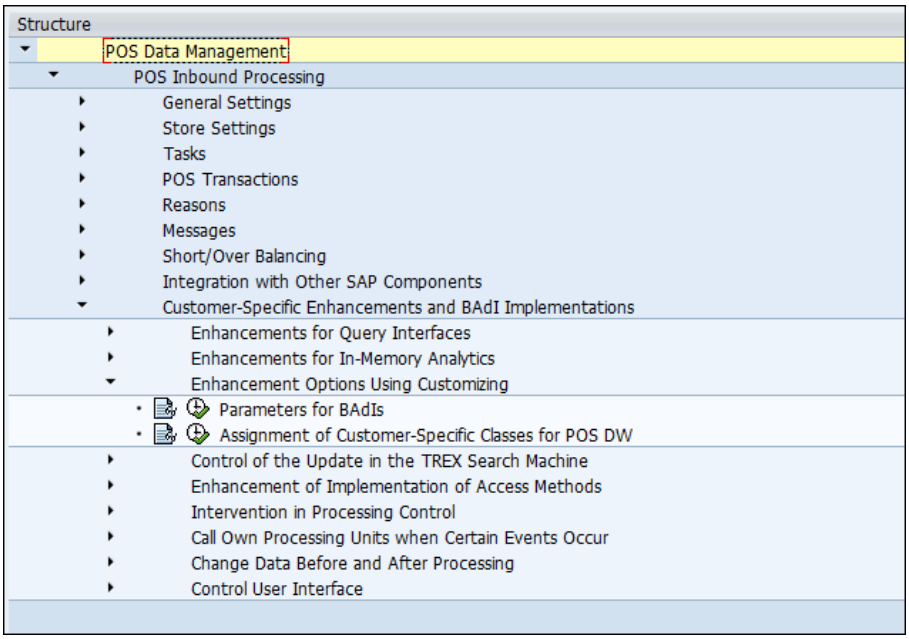
'`default_class`' is initialized at the class-constructor of /POSDW/CL_DATA_SOURCE class as follows:

```
Method  CLASS_CONSTRUCTOR                                       Active
1  method CLASS_CONSTRUCTOR.
2    default_class = /posdw/cl_customer_classname=>get_classname(
3      i_basic_class   = '/POSDW/CL_DATA_SOURCE'
4      i_default_class = '/POSDW/CL_DATA_SOURCE_DB' ).
5  endmethod.
```

```
METHOD get_classname.
  SELECT SINGLE clsname_cust FROM  /posdw/oocl2 INTO r_clsname_cust
         WHERE  clsname  = i_basic_class
         AND    active   = 'X'.
  IF sy-subrc NE 0.
    IF i_default_class IS INITIAL.
      r_clsname_cust = i_basic_class.
    ELSE.
      r_clsname_cust = i_default_class.
    ENDIF.
  ENDIF.
ENDMETHOD.
```

If a customer-specific class is maintained and is active in the Customizing for SAP POS DM 1.0, it will be used to create the default_instance. Otherwise /POSDW/CL_DATA_SOURCE_DB will be used to create the default_instance.

The following figure shows customer-specific enhancements and BAdI implementations in the Customizing for SAP POS DM1.0.



Customizing for SAP POS DM 1.0 View

Set /POSDW/CL_DATA_SOURCE_ARCHIVE as the C_SOURCE

There are three places in the existing code where /POSDW/CL_DATA_SOURCE_ARCHIVE is used as the c_source:

1. In LPA, if data is not found by not passing c_source, the archive data source is created and passed in to as the c_source to read or search the TLOG data:

   Example: /POSDW/CL_LPA_TXN_VIEWER->RETRIEVE_DATA

```
CREATE OBJECT lr_archive_source
 TYPE
   /posdw/cl_data_source_archive
 EXPORTING
   ir_retailstoreid              = rt_retailstoreid
   ir_businessdaydate            = rt_businessdaydate.
```

```
          CALL FUNCTION '/POSDW/READ_TLOG'
            EXPORTING
              i_readtransdetails = 'X'
              i_ext_key          = lv_ext_key
            CHANGING
              ct_transaction     = et_transaction
              c_source           = lr_archive_source.
```

/POSDW/CL_LPA_TXN_VIEWER->SELECT_TRANSACTIONS

```
       CREATE OBJECT lo_archive_source
        TYPE
          /posdw/cl_data_source_archive
        EXPORTING
          ir_retailstoreid              = rt_retailstoreid
          ir_businessdaydate            = rt_businessdaydate.

*     @todo_mbi: is it really necessary to read details ?!
      CALL FUNCTION '/POSDW/SEARCH_TLOG'
        EXPORTING
          i_readtransdetails = 'X'
          i_retailstoreid    = is_transaction-retailstoreid
          i_businessdaydate  = is_transaction-businessdaydate
          is_selection       = ls_selection
          i_use_trex         = '1'
        IMPORTING
          et_transaction     = et_transaction
        CHANGING
          c_source           = lo_archive_source.
```

2. /POSDW/CL_CHANGLOG -> GET_PLOG() and /POSDW/CL_CHANGLOG->GET_TLOG()
3. Archiving read report: /POSDW/ARCHIVE_READ

Switching C_SOURCE to Support the Database

Switching the default data source can be done at the class constructor of /POSDW/CL_DATA_SOURCE in order to achieve the desired behavior and minimize any changes to the code:

```
     DATA:  lv_default_class TYPE /POSDW/SAPCLASS.


   If HDB

          lv_default_class = '/POSDW/CL_DATA_SOURCE_FLAT_HDB'.


   ELSE.

          lv_default_class = '/POSDW/CL_DATA_SOURCE_DB'.

   ENDIF.


   default_class = /posdw/cl_customer_classname=>get_classname(
       i_basic_class    = '/POSDW/CL_DATA_SOURCE'
       i_default_class = lv_default_class ).
```

Enhanced Fields

In SAP POS DM 1.0, enhanced fields are not stored in the /POSDW/TLOGS or /POSDW/TLOGL 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 the SAP On-Shelf Availability functionality.

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:

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
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

/POSDW/TLOGF Analytic Fields

Entity Relationships

In SAP POS DM 1.0, 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/children 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 POS DM 1.0 is described in the Extensibility and Extensions section.

Dictionary Objects

The new dictionary objects are part of the /POSDW/HDB_DATABASE package.

Structures

This following table provides information about the structures used in SAP POS DM 1.0:

Structure Name	Component	Component Type	Description
/POSDW/HEADER_ANALYTICS	TRANSCOUNTER	/POSDW/CONSTCOUNTER	SAP POS DM 1.0 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	SAP POS DM 1.0 Item Analytics data fields
	ITEMDISC	/POSDW/REDUCTIONAMOUNT	
/POSDW/ITEM_DIST	DISTDISC	/POSDW/DISTDISC	SAP POS DM 1.0 Item Distributed data fields
	DISTTAX	/POSDW/DISTTAX	
	DISTTENDER	/POSDW/DISTTENDER	
/POSDW/ITEM_DISTRIBUTED	.INCLUDE	/POSDW/RETAILLINEITEM_FK	Item line item with distribution fields
	.INCLUDE	/POSDW/ITEM_DIST	

Structures of SAP POS DM 1.0

Table Types

The following table provides information about the table types used within SAP POS DM 1.0.

Name	Line Type	Description
/POSDW/TT_TLOGF	/POSDW/TLOGF	/POSDW/TLOGF 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.

Table Types of SAP POS DM 1.0