

SAP Customer Activity Repository 3.0 FP2 Administration Guide



Content

1	SAP Customer Activity Repository	6
2	Getting Started	7
2.1	Introduction to SAP Customer Activity Repository	8
2.2	Overall System Landscape	19
3	Document History	21
4	Naming Conventions	22
5	Security Information	24
5.1	Why is Security Necessary?	24
5.2	Security Aspects of Data, Data Flow and Processes	24
5.3	User Administration and Authentication	27
5.4	Authorizations	30
	Authorization Requirements for SAP Customer Activity Repository	31
	Authorization Requirements for Unified Demand Forecast	49
	Authorization Requirements for Omnichannel Article Availability and Sourcing (OAA)	50
	Authorization Requirements for Omnichannel Promotion Pricing (OPP)	55
5.5	Session Security Protection	55
5.6	Network and Communication Security	56
5.7	Internet Communication Framework Security	61
5.8	Data Storage Security	62
5.9	Data Protection and Privacy	64
	Introduction	64
	Glossary	65
	User Consent	66
	Read Access Logging	67
	Information Report	67
	Deletion of Personal Data	68
	Change Log	81
	Enabling Data Protection and Privacy-Related Functionality	82
5.10	Security for Additional Applications	93
5.11	Security for Omnichannel Promotion Pricing Using SAP HANA XS Advanced	93
5.12	Enterprise Services Security	96
5.13	Payment Card Security According to PCI-DSS	97
	Introduction	97
	Credit Card Usage Overview	97

	PCI-Related Customizing.	100
	Rotation or Changing of Encryption Keys.	104
	Masked/Unmasked Display.	107
	Logging of Payment Card Number Access.	108
	Encryption, Decryption, and Storage of Encrypted Credit Card Numbers.	108
	Migration.	111
	Deletion of Credit Card Storage.	111
	Archiving.	112
	Interfaces for IDoc/Services.	113
	RFC Debugging.	114
	Forward Error Handling.	114
	Card Verification Values.	114
5.14	Security-Relevant Logging and Tracing.	115
5.15	Services for Security Lifecycle Management.	116
6	Business Overview.	118
6.1	Business Scenario.	118
	Performing POS Data Transfer and Audit.	118
	Performing POS Transaction Data Migration.	119
	Performing POS Sales Analysis.	120
	Performing Inventory Visibility Analysis.	121
	Performing Sales (Billing) Document Analysis.	122
	Performing Multichannel Sales Analysis.	123
	Enabling Demand Data Foundation and Creating Demand Forecast.	124
	Monitoring On-Shelf Availability.	129
7	Configuration Information.	131
7.1	Configuring Demand Data Foundation (DDF).	131
7.2	Configuring Data Replication from SAP ERP to DDF.	150
7.3	Configuring DDF Integration Scenarios.	154
7.4	Enabling Demand Data Foundation and Creating Demand Forecast.	155
7.5	Calculating Distribution Curves in DDF.	161
	Calculating Distribution Curves for SAP Allocation Management.	161
	Calculating Distribution Curves for External System.	165
7.6	Configuring Unified Demand Forecast.	167
	Configure Forecast Visualization with the Analyze Forecast SAP Fiori App.	169
	Configure Hierarchical Priors (HPRs).	170
	Configure User DIFs.	174
	Configure Ignore DIFs.	176
	Configure Reference Products.	177
	Configure Placeholder Products.	178
	Configure Forecasting Based on Aggregated Product Data.	180

	Configure Demand Decomposition.	183
	Configure Holdout Forecasts.	184
	Configure Forecast Confidence Index (FCI).	186
	Optimize UDF Performance.	188
8	Operation Information.	190
8.1	Monitoring.	190
	Alert Monitoring.	190
	Data Consistency.	192
	Detailed Monitoring and Tools for Problem and Performance Analysis.	196
	Detailed Monitoring and Analysis Tools Specific to On-Shelf Availability.	200
	Detailed Monitoring and Analysis Tools Specific to Demand Data Foundation.	202
	Detailed Monitoring and Analysis Tools Specific to Omnichannel Promotion Pricing.	206
	Detailed Monitoring and Analysis Tools Specific to Omnichannel Article Availability and Sourcing	209
8.2	Management.	210
	Starting and Stopping.	210
	Software Configuration.	212
	Administration Tools.	213
	Backup and Restore.	216
	Load Balancing.	218
8.3	High Availability.	219
8.4	Software Change Management.	220
8.5	Troubleshooting for SAP Customer Activity Repository Modules.	221
	Troubleshooting for Omnichannel Article Availability and Sourcing (OAA).	222
	Troubleshooting for On-Shelf Availability.	225
	Troubleshooting for UDF Modeling and Forecasting.	227
8.6	Support Desk Management.	232
8.7	Enterprise Services.	234
	Ad Content Processing.	235
	Assortment Management.	239
	Business Partner Data Management.	247
	Demand Forecast Processing.	253
	Demand Planning Time Series Processing.	259
	Inventory Processing.	266
	Location Data Management.	271
	Merchandise Management.	280
	Retail Offer Management.	290
	Organizational Management.	291
	Point of Sale Transaction Processing.	294
	Product Property Management.	304
	Source of Supply Determination.	310

	Vendor Fund Management.	318
8.8	Appendix.	321
	Transaction Log (TLOG) Data Model and Storage.	321
	Extensibility and Extensions.	340
	TLOG API.	343

1 SAP Customer Activity Repository

Your customers are the driving force of your business. They are an ever-evolving group who buy products in stores, research products online prior to making purchases, order products and product parts through catalogs, wait for promotions, splurge on gifts during holidays, make returns and exchanges when they are unhappy with their purchases, and sometimes even walk out of your stores when the product they came to buy is not available.

SAP Customer Activity Repository is a foundation that collects transactional data that was previously spread over multiple independent applications in diverse formats. The repository provides a common foundation and a harmonized multichannel transaction data model for all consuming applications.

For more information about SAP Customer Activity Repository and its modules, see <https://help.sap.com/viewer/p/CARAB> |> <Version> > *Application Help* > *SAP Customer Activity Repository* >.

2 Getting Started

About this Document

This *Administration Guide* is the single source of information for implementing SAP Customer Activity Repository. It provides security, operation, and configuration information for your solution.

i Note

You can find this guide on SAP Help Portal for SAP Customer Activity Repository applications bundle at <https://help.sap.com/viewer/p/CARAB> > <Version> > *Administration* >.

We strongly recommend that you use the document on SAP Help Portal. The guide is updated with each new release of the software.

Planning, Installation, Upgrade


For information on how to plan, install, or upgrade your solution, see the common guides for SAP Customer Activity Repository applications bundle on SAP Help Portal at <https://help.sap.com/viewer/p/CARAB> > <Version> > *Installation and Upgrade* >:

- *Common Installation Guide*
- *Common Upgrade Guide*

Related Information

For implementation topics not covered in this *Administration Guide*, see the following information on SAP Service Marketplace and SAP Support Portal:

Table 1:

Information	Location
Sizing, calculation of hardware requirements, (such as CPU, disk and memory resource) using the Quick Sizer tool	http://service.sap.com/sizing 

Information	Location
Released platforms and technology-related topics such as maintenance strategies and language support	http://service.sap.com/platforms You can access the Product Availability Matrix directly at http://support.sap.com/pam .
Network Security	http://service.sap.com/securityguides
High Availability	https://wiki.scn.sap.com/wiki/display/SI/SAP+High+Availability
Performance	http://service.sap.com/performance
Information about Support Package Stacks, latest software versions, and patch level requirements	https://support.sap.com/sp-stacks
Information about Unicode technology and internationalization	https://www.sap.com/community/topic/internationalization-and-unicode.html
Reporting incidents	https://support.sap.com/kb-incidents.html
Finding SAP Notes	https://support.sap.com/notes
SAP Software Download Center	https://support.sap.com/swdc
Early Knowledge Transfer	http://support.sap.com/ekt
SAP Early Adopter Care	https://support.sap.com/support-programs-services/get-involved-early/early-access.html

2.1 Introduction to SAP Customer Activity Repository

Customer-Centric, Unified Platform

Your customers are the driving force of your business. Your customers are an ever-evolving group who buy products in stores, research products online prior to making purchases, order products and product parts through catalogs, wait for promotions, splurge on gifts during holidays, make returns and exchanges when they are unhappy with their purchases, and sometimes even walk out of your stores when the product they came to buy is not available.

SAP Customer Activity Repository consolidates data related to customer transactional activities in one, unified platform as follows:

- Transactions your customers carry out in your brick-and-mortar stores are transferred to the repository, typically using trickle feed processing.
- Sales documents, created in your source SAP ERP system as a result of orders your customers place on the Web, through a call center or from a catalog, are either regularly replicated to the repository or accessed

directly from the SAP ERP tables. The direct access to SAP ERP tables is only possible when SAP ERP and SAP Customer Activity Repository are installed on the same SAP HANA database.

SAP Customer Activity Repository classifies all these transaction by the order channel in which they were carried out.

Collecting loyalty information at the point-of-sale as well as the replication of customer information from a source CRM system to the repository allows you to drill down to the individual customer level when analyzing the transactional data.

Inventory Visibility

SAP Customer Activity Repository gives you insight to your current inventory position. Inventory information is available to the repository from a source SAP ERP system either through replication or through direct access to SAP ERP tables. The repository combines SAP ERP inventory information with the unprocessed POS sales information (that is, POS sales figures which have not yet been sent to SAP ERP). Combining the current SAP ERP inventory information with unprocessed POS sales figures allows you to gain a clearer picture of your current inventory.

Analytics

All data contained in the repository is exposed to consuming applications through SAP HANA views included in SAP HANA content for SAP Customer Activity Repository. The repository leverages all the flexibility and the convenience of SAP HANA views to simplify access to your customer's transactional data. This allows you to react faster, predict faster and make inventory and pricing decisions in your retail business faster than ever before.

SAP POS Data Management 1.0 and SAP Customer Activity Repository

SAP POS Data Management (SAP POS DM) 1.0 and SAP Customer Activity Repository are two **separate** applications that allow you to receive and process POS transaction data from connected stores. You do not need to have SAP POS DM 1.0 installed to use SAP Customer Activity Repository. In fact, you **cannot** install both SAP POS DM 1.0 and SAP Customer Activity Repository on the same SAP HANA database.

Both applications rely on the POS Inbound Processing Engine (PIPE) to collect transaction data from connected stores, process the data, and send it to follow-on applications. PIPE is made available in both applications through the inclusion of the Point of Sale Data Management software component (RTLPOSDM). However, both applications contain different versions of this component:

Table 2:

Application	Software Component Version	Functionality
SAP POS DM 1.0	RTLPOSDM 100	<ul style="list-style-type: none">• Basic PIPE functionality• Master data obtained from SAP BW

Application	Software Component Version	Functionality
SAP Customer Activity Repository	RTL CAR	<ul style="list-style-type: none"> • Basic PIPE functionality • Master data obtained from a source SAP ERP system, and, optionally, a source SAP CRM system • Additional functionality: <ul style="list-style-type: none"> ◦ SAP Workforce Management Integration ◦ Customizing and tasks for order channel assignment ◦ Additional fields in the / POSDW/TLOGF table, BAdIs, and tasks for customer identification ◦ Predefined worklist to determine unprocessed sales

SAP Customer Activity Repository offers significant advantages over SAP POS DM 1.0, including the availability of multichannel data in the same platform, predictive capabilities, inventory visibility and multichannel sales analytics content.

Unified Demand Forecast

Unified Demand Forecast (UDF) is the module in SAP Customer Activity Repository that provides the demand modeling and forecasting services:

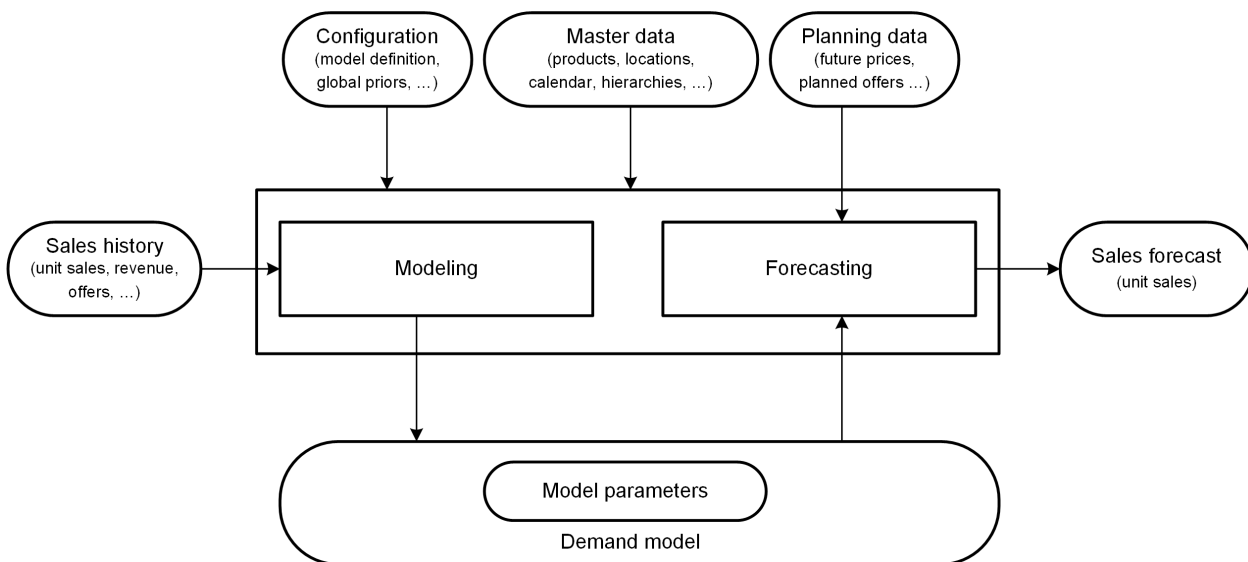


Figure 1: Data Flow in Modeling and Forecasting with UDF

Technically, UDF is provided as an application function library (software component SAP_RTL_AFL_FOR_SAP_HANA) that you install and run in the SAP HANA database.

UDF requires the installation and implementation of the Demand Data Foundation (DDF) module in SAP Customer Activity Repository.

For more information about UDF, see <https://help.sap.com/viewer/p/CARAB> |> <Version> > [Application Help](#) > [SAP Customer Activity Repository](#) > [Unified Demand Forecast](#) >.

Demand Data Foundation

Demand Data Foundation (DDF, software component `RTLDDF`) is the module that provides the consuming applications installed on top of SAP Customer Activity Repository with planning, analysis, and forecasting capabilities. DDF is a reusable data layer and includes a proprietary data model, data import infrastructure, reuse frameworks (such as exception handling and process controller), and reuse tools (such as data maintenance and scheduling interfaces).

DDF runs on the SAP HANA Platform, which stores transactional data and master data. DDF allows for the implementation of transactional (OLTP) and analytical (OLAP) use cases. DDF also supports UDF.

For more information about DDF, see <https://help.sap.com/viewer/p/CARAB> |> <Version> > [Application Help](#) > [SAP Customer Activity Repository](#) > [Demand Data Foundation](#) >.

Integrating Master Data

DDF can receive the following master data:

- Customer
- Image
- Inventory
- Location (mandatory)
- Location Hierarchy
- Offer
- Placeholder Product
- Product (mandatory)
- Product Hierarchy (mandatory)
- Product Location (mandatory)
- Transportation Lane
- User DIF
- Vendor
- Vendor Fund

For more information, see <https://help.sap.com/viewer/p/CARAB> |> <Version> > [Application Help](#) > [SAP Customer Activity Repository](#) > [Demand Data Foundation](#) > [Data Management](#) > [Master Data](#) >.

You integrate master data into DDF in two steps:

1. You first import the data from the master data system into intermediate tables in DDF that are called “staging tables”. No business validations are performed at this point.
2. You transfer the data from the staging tables to the production tables. Business validations are performed.

i Note

You can choose to skip step 2 and bypass the staging tables. The imported data is then saved directly in the production tables.

For more information about integrating master data into DDF, see the following:

- *Detailed Monitoring and Analysis Tools Specific to Demand Data Foundation*
- <https://help.sap.com/viewer/p/CARAB> **▮** <Version> **▮** *Application Help* **▮** *SAP Customer Activity Repository* **▮** *Demand Data Foundation* **▮** *Integration Information* **▮** *Inbound Processing* **▮**.

You have the following options for integrating the master data:

1. **SAP ERP-Based Integration**

This option is best suited where the master data system of record is an SAP ERP (SAP Retail) application. SAP ERP sends master data to DDF using the DRF data replication framework (DRF, transaction **DRFOUT**). The standard implementation of this framework maps the SAP ERP fields to the fields of the DDF staging tables. The DRF allows you to filter the data that you want to send to DDF, based on criteria such as project roll-outs or data volumes.

i Note

For the minimum required releases of SAP ERP, see the *Prerequisites* section of the *Common Installation Guide* (for new installations) or the *Common Upgrade Guide* (for upgrade scenarios).

For information on how to configure and use the DRF, see :

- <https://help.sap.com/viewer/p/CARAB> **▮** <Version> **▮** *Application Help* **▮** *SAP Customer Activity Repository* **▮** *Demand Data Foundation* **▮** *Integration Information* **▮** and *Master Data Replication from SAP ERP to Demand Data Foundation*.
- SAP Help Portal for SAP Master Data Governance at https://help.sap.com/viewer/p/SAP_MASTER_DATA_GOVERNANCE **▮** *Application Help* **▮** *SAP Master Data Governance* **▮** *Working with SAP Master Data Governance* **▮** *Working with SAP MDG, Central Governance* **▮** *General Functions* **▮** *Data Replication* **▮**
- *SAP Customer Activity Repository Administration Guide*:
 - *Configuring Demand Data Foundation (DDF)*
 - *Configuring Data Replication from SAP ERP to DDF*

2. **Legacy System**

You can use this option when the system of record for your master data is not an SAP ERP application (SAP ERP 6.0 with Enhancement Package EHP 5 SP Stack 07 or higher or EHP 6 SP Stack 02 or higher). This option includes any legacy system.

DDF provides inbound interfaces to receive the data into the staging tables. For more information, see <https://help.sap.com/viewer/p/CARAB> **▮** <Version> **▮** *Application Help* **▮** *SAP Customer Activity Repository* **▮** *Demand Data Foundation* **▮** *Integration Information* **▮**.

Integrating Historical Demand Data

You must provide the historical demand data through one of the ways described in the following. This allows you to use the data and to model and forecast demand as required by your consuming application. For example, you might want to perform analytics in SAP Customer Activity Repository. Or you might want to forecast consumer demand with UDF and use the results to manage offers in SAP Promotion Management. UDF analyzes the

provided historical demand data to identify and quantify each of the factors that affected your unit sales in the past (modeling) and to accurately forecast future demand (forecasting).

You can integrate different types of historical demand data in DDF, based on the following time series:

- Point-of-sale (POS) data
- Generic consumption data
- Sales orders








Each time series is completely independent. You can have separate outputs as a result of the modeling and forecasting processes. The outputs allow you to see different demand influencing factors (DIFs) by the different data sources in the same system.

➔ Recommendation






You should provide 2 years of historical input data to ensure the proper interpretation of seasonality, trend, and other yearly factors.

Time Series

Note

For more information about the time series described in the following, see <https://help.sap.com/viewer/p/CARAB>  *<Version>*  *Application Help*  *SAP Customer Activity Repository*  *Demand Data Foundation*  *Data Management*  *Time Series* .

1. **Time Series Source** POS_VDM

This virtual data model accesses POS data provided by SAP Customer Activity Repository as daily aggregated transaction log (TLOG) data. To use this time series, you need to configure the POS Data Transfer and Audit module (software component `RTL CAR`) in SAP Customer Activity Repository. For more information, see <https://help.sap.com/viewer/p/CARAB>  *<Version>*  *Application Help*  *SAP Customer Activity Repository*  *POS Data Transfer and Audit* .

➔ Recommendation

You should provide 2 years of historical TLOG data as input for modeling and forecasting.

The modeling and forecasting processes can access the TLOG data through the `POS_VDM` virtual data model. UDF uses this VDM to consume the `sap.is.retail.car/POSAggregatedSalesByArticleLocation` view in the SAP HANA content of SAP Customer Activity Repository. The data is aggregated dynamically and in real time to the daily level. Note that in this data, the product, location, sales organization, distribution channel, and order channel must match with the master data available in DDF.

2. **Time Series Source** POS_TS

This time series contains point-of-sale (POS) data persisted in DDF from the POS Inbound Processing Engine (PIPE).









Depending on your implementation strategy, you may choose to use the aggregated POS data available in DDF. Note that you can provide data to DDF from an SAP POS Data Management 1.0 system. Once the TLOG data is available in the POS Data Transfer and Audit module in SAP Customer Activity Repository, you can switch to forecasting based on the `POS_VDM` time series source.

i Note

The POS data persisted in DDF can use offers that were created in SAP Promotion Management.

The following additional information is available on SAP Help Portal:

Table 3:

Information About	Path
<ul style="list-style-type: none">○ POS transaction management, PIPE○ Sending data to DDF	https://help.sap.com/viewer/p/CARAB  <Version>  Application Help  SAP Customer Activity Repository  POS Data Transfer and Audit  Task Processing  Tasks for Sending Data to Follow-On Applications  Sending Data to DMF-Based Applications 

3. Time Series Source `POS_TS`

This time series contains point-of-sale (POS) data persisted in DDF from a legacy system and provided using enterprise services (service-oriented architecture, SOA) or the data replication framework (DRF). You can use this option when you have a legacy system that stores transaction log (TLOG) or POS data and you do not want to persist 2 years of TLOG data in SAP Customer Activity Repository, or you do not yet want to fully implement SAP Customer Activity Repository and do not have SAP POS Data Management 1.0. During a data integration project, you can determine the best way to capture and push this data into DDF. We recommend that you first perform a one-time push of the historical data. Then you include the latest sales data incrementally. This data is at the product, location, day, and channel level. To receive the data, DDF uses the [Sales](#) (`/DMF/BI_SALES_DATA`) inbound interface.

i Note

You must use the historical promotions from the legacy system to match the historical offers with the POS data persisted in DDF.

4. Time Series Source `SO_VDM`

This virtual data model accesses sales order data in SAP Customer Activity Repository. You can use this option to model and forecast sales orders (typically from a Web channel or non-brick-and-mortar store). Sales orders are available in SAP ERP. They are also available in SAP Customer Activity Repository (with multichannel information) through the SAP Landscape Transformation (SLT) replication. In this data, the product, location, sales organization, distribution channel, and order channel must match the master data that is available in DDF. You can access the sales order data through the `SO_VDM` virtual data model. UDF uses this VDM to consume the `sap.is.retail.car/SalesDocumentAggregatedSalesByArticleLocation` view in the SAP HANA content of SAP Customer Activity Repository.

5. Time Series Source `CONS_TS`

This time series contains generic consumption data. In some cases, this may be the only data available to understand the historical demand of a particular product in a particular location. This data can either be purchased from a third party, can be available from a retailer in a legacy system, or can be given from a retailer to a manufacturer (such as with consumer packaged goods or manufacturing scenarios). DDF can receive generic consumption data and provide it to UDF as input for demand modeling and forecasting.

i Note

If your data does not include information on promotions and offers, you can skip the *Integrating Promotions and Offers* section below.

You have the following options to send generic consumption data into the DDF staging tables:

- Via the SAP ERP data replication framework (DRF; PCON outbound implementation)
For more information about configuring the DRF, see the following:
 - <https://help.sap.com/viewer/p/CARAB> |> <Version> > *Application Help* > *SAP Customer Activity Repository* > *Demand Data Foundation* > *Integration Information* > *Master Data Replication from SAP ERP to Demand Data Foundation* >
 - SAP Help Portal for Master Data Governance at https://help.sap.com/viewer/p/SAP_MASTER_DATA_GOVERNANCE |> *Application Help* > *SAP Master Data Governance* > *Working with Master Data Governance* > *Working with SAP MDG, Central Governance* > *General Functions* > *Data Replication* >
- Via the *Generic* inbound interface (function module /DMF/TS_GENERIC_INBOUND)

Integrating Promotions and Offers

Promotions are available in SAP ERP. Offers are more detailed views of promotions and can be available with SAP Promotion Management, for example. Offers can include information on tactics and tactic types, allowing you to quantify their impact on the promotion and, ultimately, on the demand of the product.

The following scenarios are possible:

- Historical offers **were** created in SAP Promotion Management.
The closed-loop integration ensures that the same offer identifier (ID) can be used across systems. This integration aligns SAP Promotion Management, SAP ERP, and either SAP Customer Activity Repository or SAP POS Data Management 1.0.
- Historical offers **were not** created in SAP Promotion Management.
The closed-loop integration must be created manually because the register and TLOG data do not distinguish the offer identifier (ID).

i Note

There is no specific table in SAP ERP that keeps a relationship between an offer and a promotion. This relationship is updated in the following tables:

- WAKP (promotion line item if there is a promotion price or discount)
- WAKR (discounts at the level of the multichannel hierarchy or the article hierarchy)
- KNOBBYH (bonus buy)
- WPM_TERM_OFPR_MAP (mapping table), used for an exceptional scenario when an offer cannot be mapped to a single bonus buy. This results in doing a logical split in SAP ERP by generating a bogus offer identifier (ID) there. This bogus offer ID is then mapped to the parent offer in SAP Promotion Management.

In DDF, the /DMF/OFR_EXP_STS table provides the corresponding SAP ERP promotion information for an offer transferred from SAP Promotion Management. See *Historical Promotions from SAP ERP* in the next section.

Integration Considerations

1. *SAP ERP Promotion View*

Offers created in SAP Promotion Management are sent to SAP ERP (*Type Code D*). They are also stored in DDF as the system of record for later reference.

In addition to these offers, you can have promotions that were established in SAP ERP. These promotions provide valuable information to the demand modeling and forecasting processes.

The SAP ERP promotions are available as an SAP HANA view in SAP Customer Activity Repository through the SAP Landscape Transformation (SLT) replication. The view is `sap.is.retail.ecc/RetailPromotionByArticleLocationExcludingBonusBuy`.

Prerequisites:

- Your SAP ERP system must have been set up to provide all the promotional information required for demand modeling and forecasting. To determine those requirements for your customer-specific system landscape, please contact your SAP consultant.
- Be aware that you can only integrate the SAP ERP promotions with the following time series sources: POS_TS, POS_VDM, SO_VDM.
- Be aware that the *SAP ERP Promotion View* does not include offers that were created in SAP Promotion Management because this is not the system of record.

2. Historical Promotions from SAP ERP

You can use this option when you have historical promotions in SAP ERP and do not want to fully implement all modules of SAP Customer Activity Repository from the start. SAP ERP uses the DRF data replication framework (transaction **DRFOUT**; outbound implementation **POFF**) to send this data to the DDF staging tables.

Prerequisites:

- You can only use this option if the historical demand data contains the correct offer identifiers (IDs).
- Your SAP ERP system must have been set up to provide all the promotional information required for demand modeling and forecasting. To determine those requirements for your customer-specific system landscape, please contact your SAP consultant.
- Be aware that you can only integrate the SAP ERP promotions with the following time series sources: POS_TS, POS_VDM, SO_VDM.

For more information about configuring the DRF, see the following:

- <https://help.sap.com/viewer/p/CARAB> > <Version> > Application Help > SAP Customer Activity Repository > Demand Data Foundation > Integration Information > Master Data Replication from SAP ERP to Demand Data Foundation
- SAP Help Portal for Master Data Governance at https://help.sap.com/viewer/p/SAP_MASTER_DATA_GOVERNANCE > Application Help > SAP Master Data Governance > Working with Master Data Governance > Working with SAP MDG, Central Governance > General Functions > Data Replication

3. Historical Promotions from a Legacy System

You can use this option when you have historical promotions in a legacy system that is not SAP ERP. DDF uses the *Offer* inbound interface (`/DMF/OPIF_OFFER_INBOUND` function module) to receive this data into the staging tables.

For more information, see <https://help.sap.com/viewer/p/CARAB> > <Version> > Application Help > SAP Customer Activity Repository > Demand Data Foundation > Data Management > Master Data > Offer

Prerequisites:

- You can only use this option if the historical demand data contains the correct offer identifiers (IDs).
- Be aware that this option involves more effort to extract and transform the data.

4. Future Promotions

Future promotions follow the same logic as historical promotions. You should consider future promotions on a frequent basis to ensure that the modeling and forecasting processes have the latest information available.

➔ Recommendation

Consider how to automate or schedule your integration option to send frequent updates.

Forecast Results

- The forecast results are provided in the `/DMF/UFC_TS` table.
For more information about the data generated by modeling and by forecasting, see <https://help.sap.com/viewer/p/CARAB> **|** <Version> **|** [Application Help](#) **|** [SAP Customer Activity Repository](#) **|** [Unified Demand Forecast](#) **|** [Outbound Time Series](#).
- You can use the *Analyze Forecast* SAP Fiori app to visualize detailed sales, modeling, and forecasting information and perform in-depth analyses. For more information, see <https://help.sap.com/viewer/p/CARAB> **|** <Version> **|** [Application Help](#) **|** [SAP Customer Activity Repository](#) **|** [SAP Fiori for SAP Customer Activity Repository](#) **|** [Standalone SAP Fiori Apps for SAP Customer Activity Repository](#) **|** [Analyze Forecast](#).
- In the back-end SAP HANA content for the app, the `sap.hba.t.rtl.udf.afc.v/TimeSeriesQuery` view is available. You can use this view to query the KPIs (actual sales, model fit, corrected sales, forecast, forecast decomposition) for a given combination of product, location, sales organization, distribution channel, order channel, and time series, between a given date range. For detailed information on the view, select it in your SAP HANA studio and choose *Auto Documentation* from the context menu.
- You can also provide the forecast results to an external system (for example, to SAP Forecasting and Replenishment). Different function modules are available for this purpose. You execute the function module from the external system using a Remote Function Call (RFC). The function modules then retrieve the forecast results from the SAP Customer Activity Repository system.
For more information, see <https://help.sap.com/viewer/p/CARAB> **|** <Version> **|** [Application Help](#) **|** [SAP Customer Activity Repository](#) **|** [Unified Demand Forecast](#) **|** [General Services](#) **|** [Provide Demand Forecasts to External System](#).

Omnichannel Promotion Pricing (OPP)

Omnichannel Promotion Pricing (software component `RTLDDF`) is one of the modules included in SAP Customer Activity Repository.

OPP contains a central price and promotion repository that stores all the relevant information for the calculation of effective sales prices in all sales and communication channels (points of sale, web, mobile, call centers), for all items in a shopping cart. The OPP data that includes regular prices and OPP promotions can be replicated via IDocs to the different sales channel applications.

For the calculation of the effective sales prices, OPP provides the **promotion pricing service**. This promotion pricing service can be deployed locally or centrally:

- **Local deployment**
With this deployment option, the promotion pricing service runs locally on the database of the corresponding sales channel application. Therefore, regular prices and OPP promotions are replicated from the central price and promotion repository to the database of the sales channel application. In this way, the sales application can work without an additional remote system being continuously available.
- **Central deployment**

With this deployment option, the promotion pricing service runs on the central price and promotion repository located in SAP Customer Activity Repository powered by SAP HANA extended application services (XS advanced, XSA).

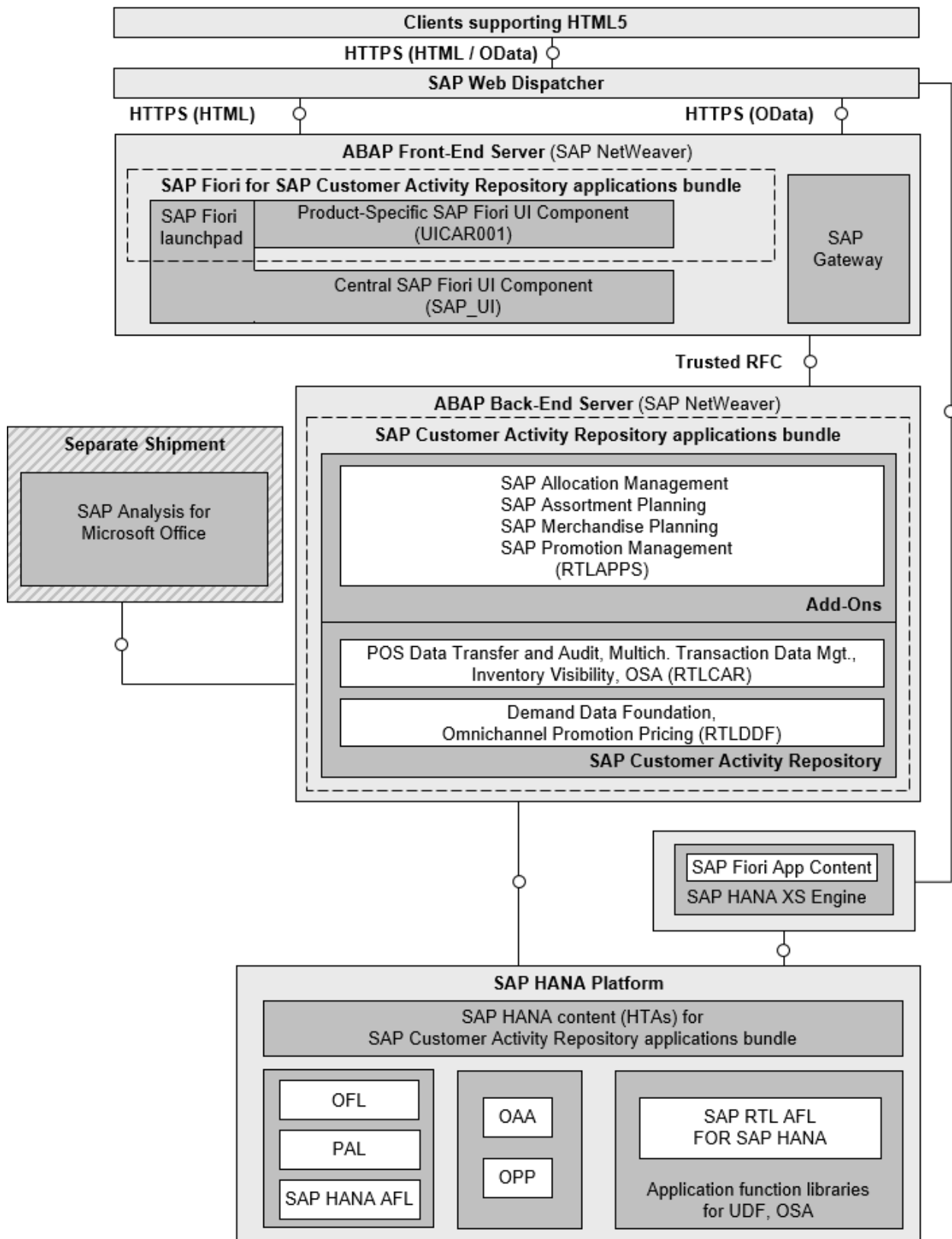
i Note

OPP provides a local and a central deployment for **SAP Hybris Commerce**.

For more information about the promotion pricing service in SAP Hybris Commerce, see the *Administration Guide* of SAP Hybris Commerce, integration package for SAP for Retail on SAP Help Portal at <https://help.sap.com/viewer/p/IPR> under ► *<Version>* ► *Administration* ► *Administration Guide* ► *Omnichannel Promotion Pricing* ►.

2.2 Overall System Landscape

The following diagram displays a potential system landscape involving a combination of SAP Customer Activity Repository and its add-ons.



3 Document History

This section provides details about major changes made in each version of this document.

i Note

The latest version of this document is available on SAP Help Portal at <http://help.sap.com/viewer/p/CARAB>.

Table 4:

Document Version	Date	Comment
1.1	2017-12-08	Minor corrections and updates in several chapters
1.0	2017-12-01	Initial version for SAP Customer Activity Repository 3.0 FP2 with these major updates: <ul style="list-style-type: none">• New Data Protection and Privacy [page 64] section added• Business Overview [page 118] section included from deprecated Common Master Guide

4 Naming Conventions

Throughout this document the following naming conventions apply.

Definitions

The following terms are used consistently in the processes and procedures described in this guide:

Table 5:

Term	Definition
back-end system	The SAP NetWeaver-based back-end server on which SAP Customer Activity Repository and its consuming applications (such as SAP Assortment Planning or SAP Promotion Management) are installed.
front-end server	The SAP NetWeaver-based front-end server on which the SAP Gateway, SAP Fiori launchpad, SAP Fiori central UI component, and SAP Fiori product-specific UI component are installed.
Common Installation Guide	<i>Installation Guide</i> for all applications provided with SAP Customer Activity Repository applications bundle
Common Upgrade Guide	<i>Upgrade Guide</i> for all applications provided with SAP Customer Activity Repository applications bundle

Naming Differences

Due to naming differences between the underlying technical objects of the components, the names of the following business objects are used interchangeably in this document:

Table 6:

SAP Customer Activity Repository	Demand Data Foundation (DDF) and Unified Demand Forecast (UDF)	SAP Assortment Planning SAP Allocation Management SAP Merchandise Planning SAP Promotion Management	SAP ERP
article	product location (specific product in a specific location)	product	article material
article variant	product variant	product variant	article variant

SAP Customer Activity Repository	Demand Data Foundation (DDF) and Unified Demand Forecast (UDF)	SAP Assortment Planning SAP Allocation Management SAP Merchandise Planning SAP Promotion Management	SAP ERP
store	location	location	store site

5 Security Information

5.1 Why is Security Necessary?

With the increasing use of distributed systems and the Internet for managing business data, the demands on security are also on the rise.

When using a distributed system, you need to be sure that your data and processes support your business needs without allowing unauthorized access to critical information. User errors, negligence, or attempted manipulation on your system should not result in loss of information or processing time. These demands on security apply likewise to the SAP Customer Activity Repository. To assist you in securing the SAP Customer Activity Repository, we provide this *Administration Guide*.

5.2 Security Aspects of Data, Data Flow and Processes

The figure below shows an overview of the data flow process for the SAP Customer Activity Repository application.

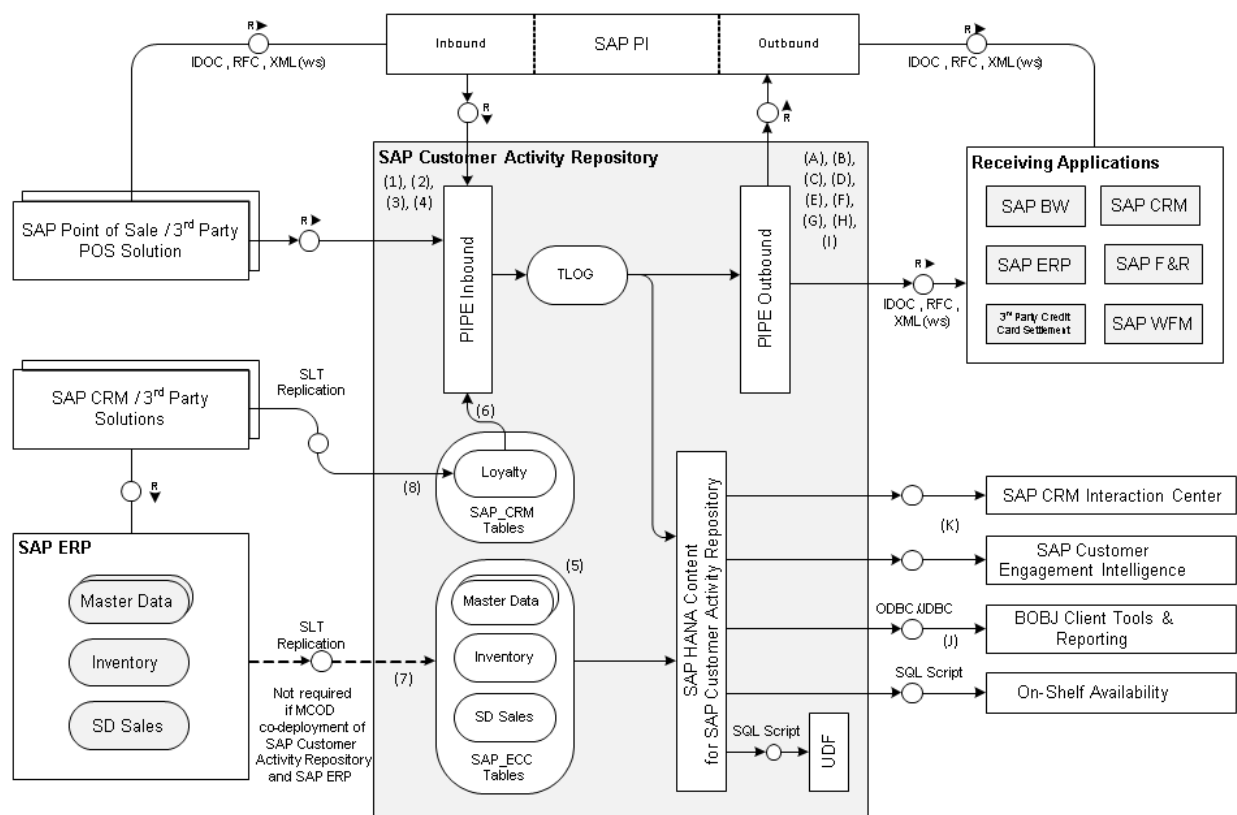



Figure 2: SAP Customer Activity Repository Data Flow Process

The table below shows the security aspect to be considered for the process step and what mechanism applies.

Table 7:

Step	Description	Security Measure
Inbound Flow 1	Manual creation of transaction within POS Workbench (ABAP DynPro / Web DynPro)	SAP Dialog User with necessary authorizations
Inbound Flow 2	Inbound transaction from SAP Retail using IDoc	SAP Communication User with necessary authorizations, ALE tRFC, encryption**
Inbound Flow 3	Inbound transaction using BAPI	SAP Communication User with necessary authorizations, RFC
Inbound Flow 4	Inbound transaction using Web Service	SAP Communication User with necessary authorizations, HTTPS
Inbound Flow 5	Master data retrieval (non-sensitive data)	SAP Dialog/Communication User with necessary authorizations, RFC

Step	Description	Security Measure
Inbound Flow 6	Loyalty card data retrieval from a CRM solution (non- sensitive data)	SAP Dialog/Communication User with necessary authorizations, RFC
Inbound Flow 7 (when required)	<p>Data replication from SAP ERP.</p> <p>i Note</p> <p>Replication is not required in cases of Multiple Components in One Database (MCOD) co-deployment of SAP Customer Activity Repository and SAP ERP.</p> <p>For more information, see http://help.sap.com/cars  Installation and Upgrade Information  Installation Guide .</p>	SLT replication (SAP system user with necessary authorizations to set up replication, SAP technical user(s) with necessary authorizations for replication of target schema)
Inbound Flow 8	Loyalty data replication from a CRM solution	SLT replication (SAP system user with necessary authorizations to set up replication, SAP technical user(s) with necessary authorizations for replication of target schema)
Inbound Flow 9	Contact data replication from yMKT (SAP Hybris Marketing) solution	SLT replication (SAP system user with necessary authorizations to set up replication, SAP technical user(s) with necessary authorizations for replication of target schema)
Inbound Flow 10 (when required)	Data replication from SAP S4HANA	SLT replication (SAP system user with necessary authorizations to set up replication, SAP technical user(s) with necessary authorizations for replication of target schema)
Outbound Flow A*	Outbound Aggregated Sales to SAP Retail/SAP S/4HANA using IDoc	SAP Communication User with necessary authorizations, ALE tRFC, encryption**
Outbound Flow B*	Outbound Sales Data & Goods Receipt/ Issue Information to SAP F&R using BAPI	SAP Communication User with necessary authorizations, RFC
Outbound Flow C*	Outbound Credit Card Settlement using BAPI	SAP Communication User with necessary authorizations, RFC

Step	Description	Security Measure
Outbound Flow D*	Outbound Payment Card using BAPI	SAP Communication User with necessary authorizations, RFC
Outbound Flow E*	Outbound Inventory Management / Goods Movement to SAP ERP / SAP S/4HANA using BAPI	SAP Communication User with necessary authorizations, RFC
Outbound Flow F*	Outbound (Aggregated) Sales Data to DMF using BAPI	SAP Communication User with necessary authorizations, RFC
Outbound Flow G*	Outbound Loyalty Information using Web Service	SAP Communication User with necessary authorizations, HTTPS
Outbound Flow H*	Outbound Sales Analysis, Error Statistics, and Loss Prevention Information to SAP BI	SAP Dialog/Communication User with necessary authorizations
Outbound Flow I*	Outbound Aggregated Historical Transaction & Product Sales Counts to SAP WFM using IDoc	SAP Communication User with necessary authorizations, ALE tRFC
Outbound Flow J	Analytical query view data (for example, Inventory Visibility, and so on) to reporting tools	SAP Hana Database User with necessary object & analytical privileges, ODBC/JDBC
Outbound Flow K	Customer-based view data (for example, customer segmentation, and so on) to SAP CRM	SAP Communication User with necessary authorizations, RFC

* Within Task Processing

** Sensitive data that must be encrypted would consist of credit card information, and this information will be stored in a secure manner within the SAP Customer Activity Repository database (for example, encrypted, masked, and so on).

5.3 User Administration and Authentication

SAP Customer Activity Repository uses the user management and authentication mechanisms provided with the SAP NetWeaver platform, in particular the AS 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 Customer Activity Repository.

The SAP HANA content for SAP Customer Activity Repository uses the user management and authentication mechanisms provided with the SAP HANA appliance software. Therefore, the security recommendations and guidelines for user administration and authentication as described in the *Security* section of the *Administrator's Guide, SAP HANA Live for SAP Business Suite, Support Package Stack 02* apply.

In addition to these guidelines, we include information about user administration and authentication that specifically applies to SAP Customer Activity Repository.

User Management

User management for SAP Customer Activity Repository uses the mechanisms provided by the SAP NetWeaver AS ABAP, for example, tools, user types, and password policies. For an overview of how these mechanisms apply for SAP Customer Activity Repository, see the sections below. In addition, we provide a list of the standard users required for operating SAP Customer Activity Repository.

Similarly, other components of the technical system landscape for SAP Customer Activity Repository, such as SAP ERP Central Component (ECC) and/or SAP NetWeaver Process Integration (PI), also use the mechanisms provided with the SAP NetWeaver AS ABAP.

User Administration Tools

The table below shows the tools to use for user management and user administration with SAP Customer Activity Repository.

Table 8:

Tool	Description	Requirements
User and role maintenance with SAP NetWeaver AS ABAP (transactions SU01 , PFCG)	<p>For more information, see:</p> <ul style="list-style-type: none"> • AS ABAP Authorization Concept in the SAP NetWeaver Application Server ABAP Security Guide • SAP Library for SAP NetWeaver on SAP Help Portal at http://help.sap.com/nw74 <ul style="list-style-type: none"> ▸ Application Help ▸ Function-Oriented View ▸ Solution Life Cycle Management ▸ Security and User Administration ▸ 	SAP NetWeaver Application Server ABAP should be running.

User Types

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

The user types that are required for SAP Customer Activity Repository include:

- Individual users:
 - Dialog users are used for interactive system access, such as SAP GUI for Windows or RFC connections.
 - Internet users are used for internet connections. The same policies apply as for dialog users, but used for Internet connections.
 - Named users are required for all Business Intelligence clients like SAP BusinessObjects BI Suite UIs.

- Technical users:
 - Communication users are used for dialog-free communication through external RFC calls.
 - Background users are used for background processing and communication within the system, such as, running scheduled inbound/outbound dispatcher jobs.

For more information on these user types, see *User Types* in the *SAP NetWeaver Application Server ABAP Security Guide*.

All user types described in the *SAP HANA Security Guide* are required for the SAP HANA content for SAP Customer Activity Repository. For more information, see *User Types* in the *SAP HANA Security Guide*.

Standard Users

SAP Customer Activity Repository does not require specialized standard users. The POS Data Transfer and Audit component of SAP Customer Activity Repository indirectly uses SAP NetWeaver standard users.

For more information about SAP NetWeaver standard users, see *Protecting Standard Users* in the *SAP NetWeaver Application Server ABAP Security Guide*.

➔ Recommendation

We recommend changing the user IDs and passwords for any users that are automatically created during installation.

Users and Roles for SAP Smart Business Applications

For more information on the users and roles required by specific SAP Smart Business applications delivered with SAP Customer Activity Repository, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB> >> <Version> > *Application Help* > *SAP Customer Activity Repository* > *SAP Fiori for SAP Customer Activity Repository* > *SAP Smart Business for SAP Customer Activity Repository* > *SAP Smart Business for Multichannel Sales Analytics* >. The *App Implementation* documentation for each SAP Smart Business app contains the information on the required users and roles.

Users and Roles for Standalone SAP Fiori Apps

SAP Customer Activity Repository is delivered with the *Analyze Forecast* standalone SAP Fiori app. For more information, see the following:

- Users and roles for the app: See the *App Implementation: Analyze Forecast* section under <https://help.sap.com/viewer/p/CARAB> >> <Version> > *Application Help* > *SAP Customer Activity Repository* > *SAP Fiori for SAP Customer Activity Repository* > *Standalone SAP Fiori Apps for SAP Customer Activity Repository* > *Analyze Forecast* >.
- Configuration: See the *Configure the Analyze Forecast App* section in the *Common Installation Guide* (for new installations) or the *Common Upgrade Guide* (for upgrade scenarios). You can find both guides under <https://help.sap.com/viewer/p/CARAB> >> <Version> > *Installation and Upgrade* >.

User Data Synchronization

The application does not deliver additional user data synchronization related features in addition to those available in the SAP NetWeaver platform. It also does not impose any special needs or restrictions, which would limit the usage of related SAP NetWeaver tools.

➔ Recommendation

For any scenarios where system inter-connectedness at the user level is a requirement, it is recommended that the same users exist throughout all the pertinent connected systems in the landscape.

Integration into Single Sign-On Environments

SAP Customer Activity Repository supports the Single Sign-On (SSO) mechanisms provided by the SAP NetWeaver AS ABAP. Therefore, the security recommendations and guidelines for user administration and authentication as described in the *SAP NetWeaver Security Guide* also apply to SAP Customer Activity Repository.

For more information about the available authentication mechanisms, see the *User Authentication and Single Sign-On* section in the *SAP NetWeaver Library*.

More Information

Product documentation for SAP NetWeaver on SAP Help Portal at https://help.sap.com/viewer/p/SAP_NETWEAVER

5.4 Authorizations

SAP Customer Activity Repository uses the authorization provided by the SAP NetWeaver AS ABAP.

Therefore, the recommendations and guidelines for authorizations as described in the *SAP NetWeaver Application Server ABAP Security Guide* also apply to the SAP Customer Activity Repository application.

The SAP NetWeaver authorization concept is based on assigning authorizations to users based on roles. For role maintenance, use the profile generator (transaction **PF03**) on the AS ABAP.

i Note

For more information about how to create roles, see *Role Administration* in the *SAP NetWeaver Library*.

5.4.1 Authorization Requirements for SAP Customer Activity Repository

SAP HANA Content for SAP Customer Activity Repository

The SAP HANA content for SAP Customer Activity Repository relies on the access control mechanisms of the underlying SAP HANA database. As a prerequisite, it is assumed that every business user (user accessing SAP HANA content for SAP Customer Activity Repository in the SAP HANA database) is created as a named SAP HANA database user. To control the business user's access to the SAP HANA content and displayed data for SAP Customer Activity Repository, the relevant authorization settings must be configured in the SAP HANA database.

SAP HANA has implemented the regular SQL authorization concept based on privileges. Named SAP HANA database users are normally only granted access to the top-level (query) views required for their direct use, and this is done using SAP HANA object privileges. In situations where there are further restrictions required on the actual results to be provided by these views, SAP HANA analytical privileges serve to further restrict the data at the row-level. These configurations must be based on specific retailers' needs as well as the types of data involved and the existing authorizations relevant for the data involved.

The SAP HANA content for the SAP Customer Activity Repository follows the same approach to security authorizations privileges as was originally established by SAP HANA Live for SAP Business Suite. For more information, see https://help.sap.com/viewer/p/SAP_HANA_LIVE ► *SAP HANA Live for SAP Business Suite Administrator's Guide* ► *Security* ► *Authorizations* ► *Privileges* ►.

It is recommended that any consumption or further extension of the SAP HANA content for SAP Customer Activity Repository also follows these security principles.

Analytics Authorization Assistant

The SAP HANA content for SAP Customer Activity Repository provides views that are very similar to those from SAP HANA Live for SAP ERP, but also provides views that expose similar data from SAP S/4HANA in a similar way. Although SAP HANA Live for SAP ERP is no longer a required component for view content, there are other beneficial components and tools available within this solution other than only SAP HANA view content. As a result we recommend that you use the Analytics Authorization Assistant to manage authorizations.

The Analytics Authorization Assistant automatically locates authorizations that a user has in SAP NetWeaver AS ABAP and transforms these authorizations into analytic privileges and necessary object privileges on the SAP HANA database by creating a user-based SAP HANA role which can then be granted to the named SAP HANA database user. The created SAP HANA privilege objects are used to access the applicable views, whether they are in SAP HANA Live for SAP ERP or SAP HANA content for SAP Customer Activity Repository.

The means by which the relevant user-specific authorizations are mapped to specific high-level query views is through the definition of Analytics Authorization Assistant metadata within the view itself using the tool's SAP HANA Developer Studio plug-in. The SAP HANA content for SAP Customer Activity Repository also includes such types of metadata, where applicable. It is recommended that any custom views also follow the same approach using metadata applicable for the usage of the view and the data involved.

The user-specific authorizations required by SAP Customer Activity Repository, specifically, the data found in tables `USRBF2` and `UST12`, are maintained in a source SAP ERP or S/4HANA system. Depending on the deployment option you selected during the installation of SAP Customer Activity Repository, Analytics Authorization Assistant accesses authorization tables as follows:

Table 9:

Deployment Option	Table Access
SAP Customer Activity Repository co-deployed with SAP ERP	Directly from the SAP ERP database schema (<code>SAP_ECC</code>) on the SAP HANA database
SAP Customer Activity Repository co-deployed with S/4HANA	Directly from the S/4HANA database schema (<code>SAP_S4H</code>) on the SAP HANA database
SAP Customer Activity Repository standalone	From tables replicated to a dedicated SAP Customer Activity Repository schema from the source SAP ERP or S/4HANA system

The query views available as part of the SAP HANA content for SAP Customer Activity Repository rely on the following SAP ERP / S/4HANA authorization objects, where applicable:

- `M_IS_WERKS` (Plant)
- `M_IS_VTWEG` (Distribution Channel)
- `M_IS_VKORG` (Sales Organization)
- `M_IS_MAKTL` (Material Group)

For more information about the Analytics Authorization Assistant in general, refer to SAP Note [1796718](#) and SAP Help Portal under https://help.sap.com/viewer/p/SAP_HANA_LIVE ► *Additional Information* ► *SAP HANA Live Authorization Assistant*.

Authorizations to Support Integration Scenarios

SAP Customer Activity Repository supports the following integration scenarios:

- Loss Prevention Analytics (LPA) (task [5001](#), SAP Standard Profile)
- Demand Management Foundation (DMF) sales reporting, provided through task processing (task [0050](#), SAP Standard Profile)
- Inventory Management (IM) goods movement reporting to ERP, provided through task processing (task [0017](#), SAP Standard Profile)
- Forecasting & Replenishment (F&R) sales reporting, provided through task processing (task [0020](#), SAP Standard Profile)
- Credit Card Settlement, provided through task processing (task [0015](#), SAP Standard Profile)
- Oil & Gas SSR Payment Card data processing in ERP, provided through task processing (task [0101](#), SAP Standard Profile)

To enable these integration scenarios, the SAP Activity Repository system communicates with other SAP systems using Remote Function Calls (RFCs). The authorization objects that are verified during this integration are listed in SAP Note [1940161](#).

Role and Authorization Concept for SAP Customer Activity Repository

The tables in the sections below show the standard roles and authorization objects that are used in the components of SAP Customer Activity Repository.

Standard Roles for SAP Customer Activity Repository

The table below shows the standard roles that are used by SAP Customer Activity Repository.

Table 10: Standard Roles

Role	Description
/POSDW/ADMINISTRATOR	<p>Performs administrative activities that should not be executed by normal users. These include deleting data and explicitly reconstructing index records.</p> <ul style="list-style-type: none"> • Cross-application Authorization Objects (AAAB): <ul style="list-style-type: none"> ◦ 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): <ul style="list-style-type: none"> ◦ Cross Client Table Maintenance S_TABU_CLI field CLII has value: 'X' - Allowed: Maintenance of cross-client tables ◦ Table Maintenance (via standard tools such as SM30) S_TABU_DIS field ACTVT has values: 02 - Change 03 - Display • Basis - Central Functions (BC_Z): <ul style="list-style-type: none"> ◦ ALV Standard Layout S_ALV_LAYO field ACTVT has value: 23 - Maintain • SAP Point-Of-Sale Data Transfer and Audit: <ul style="list-style-type: none"> ◦ Authorizations for Outbound Processing in PIPE W_POS_AGGP field /POSDW/OAC has value: 16 ◦ Authorizations for Aggregation in PIPE W_POS_AGGR field /POSDW/AAC has values: 01, 02 ◦ Authorizations for PIPE-related tasks W_POS_STAT field /POSDW/SAC has value: 01 ◦ Authorizations for Data on POS Transactions W_POS_TRAN field /POSDW/PAC has values: 01, 03, 06, 24, 31, 32, 34

Role	Description
/POSDW/SALES_AUDIT	<p>Performs the daily monitoring of the POS inbound data, including analyses and evaluations.</p> <ul style="list-style-type: none"> • Cross-application Authorization Objects (AAAB): <ul style="list-style-type: none"> ◦ Transaction Code Check at Transaction Start S_TCODE field TCD has values: /POSDW/IDIS, /POSDW/MONO, /POSDW/MON1, /POSDW/MON2, /POSDW/PDIS • SAP Point-Of-Sale Data Transfer and Audit: <ul style="list-style-type: none"> ◦ Authorizations for credit card numbers in the POS Inbound Processing Engine (PIPE) W_POS_CCNR fields have value: * ◦ Authorizations for PIPE-related tasks W_POS_STAT fields have value: * ◦ Authorizations for Data on POS Transactions W_POS_TRAN field /POSDW/PAC has values: 01, 02, 03
/POSDW/SAP_QUERY_TRAN_S_RFC	<p>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.</p> <ul style="list-style-type: none"> • Basis and Administration (BC_A): <ul style="list-style-type: none"> ◦ Auth. Check for RFC access S_TCODE field: <ul style="list-style-type: none"> ◦ ACTVT has value: 16 - Execute ◦ RFC_NAME has values: /POSDW/CONFIRM_AGGR_PACK, /POSDW/SALES_QUERY_API, ARFC, ERFC ◦ RFC_TYPE has value: FUGR

Role	Description
SAP_ISR_DDF_MASTER	<p>First PFCG role required for the Demand Data Foundation (DDF) module in SAP Customer Activity Repository. The role provides access to the following services:</p> <ul style="list-style-type: none"> • Check Mass Maintenance • Configure Load Balancing • Maintain Area of Responsibility • Locations • Location Hierarchy • Monitor Compressed Data • Maintain Product Locations • Monitor Exceptions • Monitor Imports • Placeholder Products • Process Inbound Staging Tables • Product • Product Groups • Purging Exceptions from the Database • Remove Time Series • Schedule Model and Forecasts • Search for Scheduled Jobs • Search Placeholder Products • Search Transportation Lane • Where Used Framework for Purging <p>For more information, execute transaction PFCG, call up the role, and consult the <i>Menu</i> tab.</p> <p>For service descriptions, see https://help.sap.com/viewer/p/CARAB ► <your release> ► <i>Application Help</i> ► <i>SAP Customer Activity Repository</i> ► <i>Demand Data Foundation</i> ► <i>General Services</i> ► as well as ► <i>Unified Demand Forecast</i> ► <i>General Services</i> ►.</p>
SAP_ISR_DDF_READONLY_MASTER	<p>Second PFCG role required for the Demand Data Foundation (DDF) module in SAP Customer Activity Repository. The role provides read-only access to the same services as the SAP_ISR_DDF_MASTER role (see above).</p> <p>For more information, execute transaction PFCG, call up the role, and consult the <i>Menu</i> tab.</p> <p>For service descriptions, see https://help.sap.com/viewer/p/CARAB ► <your release> ► <i>Application Help</i> ► <i>SAP Customer Activity Repository</i> ► <i>Demand Data Foundation</i> ► <i>General Services</i> ► as well as ► <i>Unified Demand Forecast</i> ► <i>General Services</i> ►.</p>

Role	Description
/POSDW/DPP_SECURITY	<p>PFCG Role that allows users to access tables with private and sensitive data about a subject. This role contains Data Protection and Privacy (DPP)-relevant authorization objects.</p> <ul style="list-style-type: none"> • Authorization Object S_TCODE Allows you to assign a transaction code to a user. <ul style="list-style-type: none"> ◦ /POSDW/DISP_DPD: Transaction code to run the <i>POS Transactions With Subject-Specific Data</i> report (/POSDW/PERSONAL_DATA_DISPLAY) ◦ SLG1: Transaction code for the standard application log • Authorization Object S_APPL_LOG Allows you to grant a user authorization to view or delete read access log entries generated by the POS Workbench, and execution information for the <i>POS Transactions with Subject-Specific Personal Data</i> report (/POSDW/PERSONAL_DATA_DISPLAY). • Authorization Object W_POS_DPPV Authorization object you use to give a user access to the following activities: <ul style="list-style-type: none"> ◦ 03: Viewing the masked value of personal data in the POS Workbench (/POSDW/MONO) and in the <i>Audit Report for Transaction Logs</i> (/POSDW/DISM) ◦ 04: Executing the POS Transactions with Subject-Specific Personal Data report (/POSDW/PERSONAL_DATA_DISPLAY) ◦ 23: Maintaining DPP-relevant settings in the following Customizing activities: <ul style="list-style-type: none"> ◦ ► <i>POS Data Management</i> ► <i>General Settings</i> ► <i>Define General Settings</i> ► ◦ ► <i>POS Data Management</i> ► <i>Field Selection Profile</i> ► ◦ ► <i>POS Data Management</i> ► <i>POS Transactions</i> ► <i>Define Tender Type</i> ► • Authorization Object W_POS_FSPR Authorization object you use to assign field selection profiles to users. Field selection profiles are used to determine which fields a user can see in the POS Workbench.

OData Service Roles for SAP Customer Activity Repository

The table below shows the roles required to use the OData services provided with SAP Customer Activity Repository:

Table 11: OData Service Roles

OData Service	Role
MaterialQueryResults	sap.is.retail.car.int.roles::MaterialQuery
MaterialInternationalArtINmbrQueryResults	sap.is.retail.car.int.roles::MaterialInternationalArtINmbrQuery
RetailLocationQueryResults	sap.is.retail.car.int.roles::RetailLocationQuery
POSSalesQueryResults	sap.is.retail.car.int.roles::POSSalesQuery
MultiChannelSalesQueryResults	sap.is.retail.car.int.roles::MultiChannelSalesQuery
InventoryVisibilityQueryResults	sap.is.retail.car.int.roles::InventoryVisibilityQuery
AnalyzeForecast.xsodata	sap.hba.t.rtl.udf.afc.roles::AnalyzeForecast

Standard Authorization Objects for SAP Customer Activity Repository

The table below shows the security-relevant authorization objects that are used by SAP Customer Activity Repository.

➔ Recommendation

You can use transaction **su21** to maintain authorization objects and to call up detailed information on each object. For example, to display the values for the `/DMF/AOR` object, select the object, choose **Display** from the context menu, and then **Permitted Activities**. To display more information about the `/POSDW/LPA` object, choose **Display Object Documentation**.

Table 12: Standard Authorization Objects

Authorization Object	Authorization Object Description	Field	Value	Field Description
/POSDW/LPA	Authorization for Loss Prevention Analytics (LPA)	/POSDW/PTN	<ul style="list-style-type: none"> • ACTV: Active • IACT: Inactive • INIT: Initial • NEW: New 	Pattern Status

Authorization Object	Authorization Object Description	Field	Value	Field Description
/POSDW/PTR	Authorization for POS Transaction Data	<ul style="list-style-type: none"> • /POSDW/STO • /POSDW/PAC 	<ul style="list-style-type: none"> • Selection from list of stores currently defined in customizing • Values for /POSDW/PAC are: <ul style="list-style-type: none"> ○ 01 Add or Create ○ 03 Display ○ 06 Delete ○ 24 Archive ○ 31 Create TREN Index ○ 32 Index TREN ○ 34 Delete TREN Index 	<ul style="list-style-type: none"> • Store • Activities for Authorization for POS Transactions
W_POS_ADMI	Authorization for Administrative Tasks	<ul style="list-style-type: none"> • /POSDW/TAB • /POSDW/ADC 	<p>01 Assign tables to Placement Group Types</p> <p>02 Create Level 2 Range Partitions for TLOG tables</p> <p>03 Delete Level 2 Range Partitions for TLOG tables</p> <p>04 View Level 2 Range Partitions for TLOG tables</p> <p>05 Execute Data Aging for TLOG tables</p>	<ul style="list-style-type: none"> • Table Name • Activities for Authorization for Administrative Tasks

Authorization Object	Authorization Object Description	Field	Value	Field Description
W_POS_AGGP	Authorizations for initiating outbound processing in PIPE	<ul style="list-style-type: none"> • /POSDW/STO • /POSDW/AGL • /POSDW/OTS • /POSDW/OAC 	<ul style="list-style-type: none"> • Selection from list of stores currently defined in customizing • Selection from list of aggregation levels currently defined in customizing • Selection from list of outbound tasks currently defined in customizing • Values for /POSDW/OAC are: <ul style="list-style-type: none"> ○ 16 Process Outbound Task ○ 85 Reverse Outbound Task 	<ul style="list-style-type: none"> • Store • Aggregation Level • Task for Outbound Processing • Activities for Outbound Processing in PIPE

Authorization Object	Authorization Object Description	Field	Value	Field Description
W_POS_AGGR	Authorizations for performing aggregations in PIPE	<ul style="list-style-type: none"> • /POSDW/STO • /POSDW/AGL • /POSDW/AAC 	<ul style="list-style-type: none"> • Selection from list of stores currently defined in customizing • Selection from list of aggregation levels currently defined in customizing • Values for / POSDW/AAC are: <ul style="list-style-type: none"> ○ 01 Create Aggregate ○ 02 Change Aggregate ○ 03 Display Aggregate ○ 05 Close Aggregate ○ 06 Delete Aggregate ○ 24 Archive Aggregate ○ 25 Reload Aggregate ○ 26 Display Archive Aggregate ○ 56 Display Archive Aggregate 	<ul style="list-style-type: none"> • Store • Aggregation Level • Task for Outbound Processing • Activities for Aggregation in PIPE
W_POS_CCNR	Authorizations for credit card numbers in PIPE	<ul style="list-style-type: none"> • /POSDW/STO • /POSDW/CAC 	<ul style="list-style-type: none"> • Selection from list of stores currently defined in customizing • Values for / POSDW/CAC are: <ul style="list-style-type: none"> ○ 02 Display Credit Card Number 	<ul style="list-style-type: none"> • Store • Activities for Authorization for Credit Card Numbers

Authorization Object	Authorization Object Description	Field	Value	Field Description
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	<ul style="list-style-type: none"> • /POSDW/STO • /POSDW/SAC • /POSDW/TAS 	<ul style="list-style-type: none"> • Selection from list of stores currently defined in customizing • Values for /POSDW/SAC are: <ul style="list-style-type: none"> ◦ 01 Process Task • Selection from list of tasks currently defined in customizing 	<ul style="list-style-type: none"> • Store • Activities for Authorization for Task Status • Task Code
W_POS_TIBQ	Authorizations for performing Inbound Queue operations in PIPE	<ul style="list-style-type: none"> • /POSDW/STO • /POSDW/IAC <ul style="list-style-type: none"> ◦ 01 Create ◦ 02 Change ◦ 03 Display ◦ 06 Delete ◦ 16 Process 	<ul style="list-style-type: none"> • Selection from list of stores currently defined in customizing • Values for /POSDW/IAC are: 	<ul style="list-style-type: none"> • Store • Activities for TIBQ Authorization

Authorization Object	Authorization Object Description	Field	Value	Field Description
W_POS_TRAN	Authorizations for changing data in POS transactions	<ul style="list-style-type: none"> • /POSDW/STO • /POSDW/PAC 	<ul style="list-style-type: none"> • Selection from list of stores currently defined in customizing • Values for /POSDW/PAC are: <ul style="list-style-type: none"> ○ 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 ○ 41 Delete Unprocessed Sales Transactions ○ 42 Delete Log Entries ○ 56 Display Archive 	<ul style="list-style-type: none"> • Store • Activities for Authorization for POS Transactions
W_POS_UNPR	Used to validate whether a user can view unprocessed transactions for a store	<ul style="list-style-type: none"> • /POSDW/PLT • /POSDW/UAC 	<ul style="list-style-type: none"> • 4-character customer-defined value • 03 Display data 	<ul style="list-style-type: none"> • Site number • Activities permitted by the authorization
B_CCSEC	Unmasked display of credit card numbers	ACTVT	<ul style="list-style-type: none"> • 03 Display • 06 Delete • 71 Analyze 	

Authorization Object	Authorization Object Description	Field	Value	Field Description
CA_POWL	Authorizations for the <i>Personal Object Worklist (POWL)</i> iViews for the DDF POWL applications.	<ul style="list-style-type: none"> POWL_APPID POWL_CAT POWL_LSEL POWL_QUERY POWL_RA_AL POWL_TABLE 		<ul style="list-style-type: none"> Application ID Activity Authority state Activity Authority state Authority state
S_START	<p>Used when checking the start authorization for particular TADIR objects (such as Web Dynpro applications).</p> <div style="background-color: #fff9c4; padding: 5px; border: 1px solid #ccc;"> <p>⚠ Caution</p> <p>Do not use this authorization object directly in your own coding. It can only be used through the CL_START_AUTH_CHECK class.</p> </div> <p>For more information about the start authorization check for program objects with object catalog entries, see SAP Note 1413011.</p>	<p><i>Object Name</i></p> <p><i>Object Type</i></p> <p><i>Program ID</i></p>	<p>/DMF/* and /PRM/*</p> <p>POWL</p> <p>WDYA</p> <p>R3TR</p>	
S_TCODE	Transaction check at transaction start.	TCD	<p>Report /DMF/TS_DELETE</p> <p>RSM37</p> <p>SM37</p>	
/DMF/AOR	Authorization for the <i>Maintain Area of Responsibility (AOR)</i> service.	ACTVT	<p><i>01 Create or generate</i></p> <p><i>02 Change</i></p> <p><i>03 Display</i></p> <p><i>06 Delete</i></p>	Activity

Authorization Object	Authorization Object Description	Field	Value	Field Description
/DMF/CM_AT	Authorization to assign attributes.	ACTVT	01 Create or generate 02 Change 03 Display 06 Delete	Activity
/DMF/CM_IM	Authorization to define images.	ACTVT	02 Change 03 Display 06 Delete	Activity
/DMF/DISCH	Authorization for the <i>Distribution Chain</i> object.	ACTVT /DMF/SOCHK /DMF/CHCHK	01 Create or generate 02 Change 03 Display 06 Delete	Activity Internal Organizational Unit Identifiers
/DMF/DMDTS	Authorization to access demand time series data, including any business intelligence (BI) interfaces that would be sending point-of-sale (POS) data or generic consumption data.	ACTVT	01 Create or generate 02 Change 03 Display 06 Delete	Activity
/DMF/EWB	Authorization for the exception handling framework.	ACTVT	01 Create or generate 02 Change 03 Display 32 Save 33 Read	Activity
/DMF/FCANA	Authorization to access forecasting analytics.	ACTVT	16 Execute 71 Analyze	Activity
/DMF/IMAGE	Authorization for the <i>Image</i> object.	ACTVT	01 Create or generate	Activity

Authorization Object	Authorization Object Description	Field	Value	Field Description
/DMF/INV	Authorization for the <i>Inventory</i> object.	ACTVT	<i>01 Create or generate</i> <i>02 Change</i> <i>03 Display</i> <i>06 Delete</i>	Activity
/DMF/LANE	Authorization for the <i>Transportation Lane</i> object.	ACTVT	<i>01 Create or generate</i> <i>02 Change</i> <i>03 Display</i> <i>06 Delete</i>	Activity
/DMF/LBUI	Authorization for the <i>Configure Load Balancing</i> service and user interface for the DDF server configuration.	ACTVT	<i>01 Create or generate</i> <i>02 Change</i> <i>03 Display</i> <i>06 Delete</i> <i>32 Save</i>	Activity
/DMF/LOC	Authorization for the <i>Location</i> object.	ACTVT	<i>01 Create or generate</i> <i>02 Change</i> <i>03 Display</i> <i>06 Delete</i>	Activity
/DMF/LOCHR	Authorization for the <i>Location Hierarchy</i> object.	ACTVT	<i>01 Create or generate</i> <i>02 Change</i> <i>03 Display</i> <i>06 Delete</i>	Activity
/DMF/ME	Authorization for the <i>Monitor Exceptions</i> service.	ACTVT	<i>01 Create or generate</i> <i>02 Change</i> <i>03 Display</i> <i>06 Delete</i>	Activity
/DMF/MI	Authorization check for the <i>Monitor Imports</i> service.	ACTVT	<i>01 Create or generate</i> <i>02 Change</i> <i>03 Display</i> <i>06 Delete</i>	Activity

Authorization Object	Authorization Object Description	Field	Value	Field Description
/DMF/OFRSO	Internal organizational unit identifiers for the distribution channel and the sales organization.	<ul style="list-style-type: none"> /DMF/CHCHK /DMF/SOCHK 	<i>01 Create or generate</i> <i>02 Change</i> <i>03 Display</i> <i>06 Delete</i> <i>37 Accept</i> <i>61 Export</i> <i>78 Assign</i>	Activity
/DMF/OPUI	Authorization to access the user interface of the <i>Schedule Model and Forecasts</i> service.	ACTVT	<i>03 Display</i> <i>16 Execute</i>	Activity
/DMF/PHP	Authorization for the <i>Placeholder Product</i> object.	ACTVT	<i>01 Create or generate</i> <i>02 Change</i> <i>03 Display</i> <i>06 Delete</i>	Activity
/DMF/PROD	Authorization for the <i>Product</i> object.	ACTVT	<i>01 Create or generate</i> <i>02 Change</i> <i>03 Display</i> <i>06 Delete</i> <i>61 Export</i>	Activity
/DMF/PRDHR	Authorization for the <i>Product Hierarchy</i> object.	ACTVT	<i>01 Create or generate</i> <i>02 Change</i> <i>03 Display</i> <i>06 Delete</i> <i>61 Export</i>	Activity
/DMF/PRDLC	Authorization for the <i>Product Location</i> object.	ACTVT	<i>01 Create or generate</i> <i>02 Change</i> <i>03 Display</i> <i>06 Delete</i>	Activity

Authorization Object	Authorization Object Description	Field	Value	Field Description
/DMF/SLSH	Authorization for the <i>Sales History</i> object.	ACTVT	<i>02 Change</i> <i>03 Display</i> <i>06 Delete</i>	Activity

Standard Roles for On-Shelf Availability

The table below shows the standard roles that are used by the On-Shelf Availability (OSA) functionality in SAP Customer Activity Repository. These roles are required in addition to the technical role for SAP Gateway.

Table 13: Standard Roles

Role	Description	Authorization Objects/Fields
/OSA/MANAGER	Permissions assigned to a store manager who logs on.	<ul style="list-style-type: none"> /OSA/STOR:OSA/STORE, ACTVT /OSA/DEPT:OSA/AREA, OSA/STORE, ACTVT /OSA/PROD:OSA/AREA, OSA/STORE, ACTVT
/OSA/EMPLOYEE	Permissions assigned to a store employee who logs on.	<ul style="list-style-type: none"> /OSA/STOR:OSA/STORE, ACTVT /OSA/DEPT:OSA/AREA, OSA/STORE, ACTVT /OSA/PROD:OSA/AREA, OSA/STORE, ACTVT
/OSA/ADMINISTRATOR	Permissions for administrative activities: <ul style="list-style-type: none"> Dispatching of the OSA algorithm Archiving the status log data 	<ul style="list-style-type: none"> /OSA/ADM: /OSA/ADM_A

External Roles Specific to Loss Prevention Analytics

The table below shows the **external** roles, that is, roles defined outside of the SAP Customer Activity Repository application, that are only used if you are implementing the Loss Prevention Analytics functionality.

For more information on integrating SAP Customer Activity Repository with the existing Loss Prevention Analytics (LPA) business process of the Store Analytics business scenario, see SAP Note [2010774](#).

Table 14: External Roles

Role	Description
SAP_BW_LPA_LPO	<p>Performs daily monitoring of point-of-sale activities for the purposes of investigating potential fraudulent activities.</p> <p>For more information, see https://help.sap.com/viewer/p/BI_CONTENT >> <Your version of SAP NetWeaver BI Content> > Application Help > SAP Library > BI Content > Industry Solutions > Trading Industries > Retail Trade > Store Analytics > Loss Prevention Analytics > Roles > Loss Prevention Officer >.</p> <ul style="list-style-type: none"> • Cross-application Authorization Objects (AAAB): <ul style="list-style-type: none"> ◦ Authorization Check for RFC Access S_RFC field ACTVT has value: 16 S_RFC field RFC_NAME has values: RFC1, RRMX, RRXWS, RRY1, RSAH, RSBOLAP_BICS, RSBO-LAP_BICS_CONSUMER, RSBOLAP_BICS_PRO-VIDER, RSBOLAP_BICS_PROVIDER_VAR, RSFEC, RSMENU RSOBJS_RFC_INTERFACE, RSOD_BIRM, RSRCI_LOCAL_VIEW, RSR_XLS_RFC, RSWAD, RSWRTEMPLATE, RS_BEX_REPORT_RFC, RS_IGS, RZX0, RZX2, SDIFRUNTIME, SM02, SMHB, SRFC, SUNI, SUSO, SYST, SYSU S_RFC field RFC_TYPE has value: FUGR ◦ Transaction Code Check at Transaction Start S_TCODE field TCD has values: RRMX • Basis: Administration (BC_A): <ul style="list-style-type: none"> ◦ C calls in ABAP programs S_C_FUNCT field ACTVT has value: 16 - Execute S_C_FUNCT field CFUNCNAME has value: * S_C_FUNCT field PROGRAM has value: * • Basis - Central Functions (BC_Z): <ul style="list-style-type: none"> ◦ Authorizations for Accessing Documents S_BDS_D field ACTVT has value: * S_BDS_D field LOIO_CLASS has value: * ◦ Authorizations for Document Set S_BDS_DS field ACTVT has value: * S_BDS_DS field ACTVT has value: BW_* S_BDS_DS field ACTVT has value: OT - Other Objects ◦ Authorization Object for Sending S_OC_SEND field COM_MODE has value: * S_OC_SEND field NUMBER has value: * • Business Information Warehouse (RS) <ul style="list-style-type: none"> ◦ BI Authorizations in Role S_RS_AUTH field BIAUTH has value: LOCATIO_AUTH

Role	Description
	<ul style="list-style-type: none"> ○ BEx Broadcasting Authorization to Schedule S_RS_BCS field ACTVT has value: * S_RS_BCS field RS_EVID has value: * S_RS_BCS field RS_EVTYPE has value: * S_RS_BCS field RS_OBJID has value: * S_RS_BCS field RS_OBJTYPE has value: * ○ Business Explorer - Components S_RS_COMP field ACTVT has values: 01, 02, 03, 06, 16, 22 S_RS_COMP field RSINFOAREA has value: * S_RS_COMP field RSINFOCUBE has value: * S_RS_COMP field RSZCOMPID has value: * S_RS_COMP field RZCOMPTP has values: CKF, REP, RKF, STR ○ Data Warehousing Workbench - InfoObject S_RS_IOBJ field ACTVT has value: * S_RS_IOBJ field RSIOBJ has value: * S_RS_IOBJ field RSIOBJCAT has value: * S_RS_IOBJ field RSIOBJPART has value: * ○ Data Warehousing Workbench - Aggregation Level S_RS_ALVL field ACTVT has value: 03 S_RS_ALVL field RSALVLOBJ has value: * S_RS_ALVL field RSINFOAREA has value: * S_RS_ALVL field RSPLSALVL has value: * ○ Data Warehousing Workbench - MultiProvider S_RS_MPRO field ACTVT has value: 03 S_RS_MPRO field RSMPROOBJ has value: * S_RS_MPRO field RSINFOAREA has value: * S_RS_MPRO field RSMPRO has value: * ○ Data Warehousing Workbench - InfoSet S_RS_ISET field ACTVT has value: 03 S_RS_ISET field RSISETOBJ has value: * S_RS_ISET field RSINFOAREA has value: * S_RS_ISET field RSINFOSET has value: * ○ Business Explorer - Variants in Variable Screen S_RS_PARAM field ACTVT has value: * S_RS_PARAM field PARAMNM has value: *

5.4.2 Authorization Requirements for Unified Demand Forecast

You only need to set up the authorizations for UDF if you want to perform a new installation of your SAP Customer Activity Repository applications bundle solution. For instructions, see the [Authorization Requirements for Unified Demand Forecast](#) section of the [Common Installation Guide](#). If you want to perform an upgrade from a lower release, the authorizations for UDF should already be available and there is no additional setup.

5.4.3 Authorization Requirements for Omnichannel Article Availability and Sourcing (OAA)

There are no OAA-specific PFCG roles; however, there are a number of OAA-specific authorization objects both in SAP Customer Activity Repository and in SAP S/4HANA or SAP Retail. To be able to run the OAA functionality, you need to create 3 technical users, 2 administrator users, 1 SAP HANA database user, and 1 or more business users for the SAP Fiori apps.

Roles

There are no OAA-specific PFCG roles.

Authorization Objects in SAP Customer Activity Repository

Authorization class: OAA *Authorization Class for Omnichannel Article Availability*

Table 15:

Authorization Object	Activities	Description
/OAA/ATP	16 <i>Execute</i>	Controls execution of the ATP calculation (access to ATP snapshot and to availability information from Inventory Visibility, reconciliation of temporary reservations, aggregation of availability schedule lines). Needed for report /OAA/ATP_DELTA_CLEANER.
/OAA/PREC	01 <i>Create or generate</i> 02 <i>Change</i> 03 <i>Display</i> 06 <i>Delete</i>	Controls access to ATP snapshot. Needed for report /OAA/ATP_SNAPSHOT_DELETION.
/OAA/RESV	01 <i>Create or generate</i> 02 <i>Change</i> 03 <i>Display</i> 06 <i>Delete</i>	Controls access to temporary reservations. Needed for report /OAA/ATP_RESV_DELETION.
/OAA/SRC	16 <i>Execute</i>	Controls execution of sourcing.

Authorization Object	Activities	Description
/OAA/RSI	01 <i>Create or generate</i> 02 <i>Change</i> 06 <i>Delete</i> 16 <i>Execute</i>	Controls replication of rough stock indicators. Needed for reports /OAA/ATP_RSI_GENERATION and /OAA/ATP_RSI_GENERATION_SC.
/OAA/NETW	16 <i>Execute</i>	Controls access to business object /OAA/I_NET_NETWORK. This is required for data maintenance in the <i>Manage Sourcing Networks</i> SAP Fiori app.
/OAA/SRCST	16 <i>Execute</i>	Controls access to business object /OAA/I_SRC_STRATEGY. This is required for data maintenance in the <i>Manage Sourcing Strategies</i> SAP Fiori app.
/OAA/SC	16 <i>Execute</i>	Controls access to business object /OAA/I_CHANNEL. This is required for data maintenance in the <i>Manage Sales Channels</i> SAP Fiori app.
/OAA/SRC_A	16 <i>Execute</i>	Controls access to business object /OAA/I_SOURCE_PROP. This is required for data maintenance in the <i>Manage Sources</i> SAP Fiori app. The OAA_SOURCE authorization field allows you to restrict the list of sources in the app to the sources that the user (store manager or DC manager) is responsible for.

Authorization Objects in SAP S/4HANA or SAP Retail

Authorization class: `WG` *Retailing*

Table 16:

Authorization Object	Activities	Description
W_OAA_SITE	16 <i>Execute</i>	Controls replication of sites data via IDoc. Needed for reports OAA_IDOC_SITE_REPLICATION and OAA_CREATE_CEOCODING.

Authorization Object	Activities	Description
W_OAA_PREC	16 <i>Execute</i> 06 <i>Delete</i>	<p>Controls execution of the parallelized ATP run, generation of the ATP snapshot and replication of the snapshot to SAP Customer Activity Repository.</p> <p>Needed for reports /OAA/ATP_CALL_PRECALC and /OAA/ATP_SNP_CALC. These reports are executed in SAP Customer Activity Repository and call into SAP S/4HANA or SAP Retail via RFC.</p> <p>Needed also for report /OAA/ATP_DELTA_CLEANER.</p>
W_OAA_VEND	01 <i>Create or generate</i> 03 <i>Display</i> 06 <i>Delete</i>	<p>Controls access to the uploaded vendor stock, determination of the available quantities for articles delivered by vendors and replication of the result to SAP Customer Activity Repository.</p> <p>Needed for reports /OAA/ATP_VENDOR_CALC and /OAA/ATP_SNP_CALC. These reports are executed in SAP Customer Activity Repository and call into SAP S/4HANA or SAP Retail via RFC.</p> <p>Needed also for reports OAA_VEND_STOCK_DELETION and /OAA/ATP_DELTA_CLEANER.</p>

Required Users

Table 17:

System	Type of User	Description	User Parameters	Authorizations
SAP Customer Activity Repository	Technical user	<p>For communication between SAP Hybris Commerce and SAP Customer Activity Repository</p> <p>Calls the ATP REST API, reads the ATP snapshot, executes sourcing, creates temporary reservations.</p> <p>This user is created in SAP Customer Activity Repository (transaction SU01) and is entered in the Backoffice application of SAP Hybris Commerce, under SAP Integration > HTTP Destination > HTTP Destination > Authentication Type.</p>	<p>For sourcing strategy determination:</p> <ul style="list-style-type: none"> /OAA/SRC_PAR_SG /OAA/SRC_PAR_WP /OAA/SRC_PAR_WT 	<p>/OAA/ATP <i>Execute</i></p> <p>/OAA/PREC <i>Display</i></p> <p>/OAA/SRC <i>Execute</i></p>

System	Type of User	Description	User Parameters	Authorizations
SAP S/4HANA or SAP Retail	Technical user	<p>For communication between SAP S/4HANA or SAP Retail and SAP Customer Activity Repository</p> <p>Executes the ATP run.</p> <p>This user is created in SAP S/4HANA or SAP Retail (transaction <code>SU01</code>) and is entered in transaction <code>SM59</code>, in SAP Customer Activity Repository, for the corresponding ABAP connection on tab <i>Logon & Security</i>.</p>	<p>For traceability of the parallelized ATP run: <code>W_OAA_JOB_TRACING</code></p>	<code>W_OAA_PREC Execute</code>
SAP Customer Activity Repository	Technical user	<p>Creates and updates the ATP snapshot in SAP Customer Activity Repository.</p> <p>This user is created in SAP Customer Activity Repository (transaction <code>SU01</code>) and is entered in transaction <code>SM59</code>, in SAP S/4HANA or SAP Retail, for the corresponding ABAP connection on tab <i>Logon & Security</i>.</p>		<code>/OAA/PREC Create or Generate / Change</code>
SAP Customer Activity Repository	Administrator	<p>Manually deletes ATP snapshot.</p> <p>Report <code>/OAA/ATP_SNAPSHOT_DELETION</code></p>		<code>/OAA/PREC Delete</code>
		<p>Manually deletes temporary reservations.</p> <p>Report <code>/OAA/ATP_RESV_DELETION</code></p>		<code>/OAA/RESV Delete</code>
		<p>Manually cleans up delta ATP tables.</p> <p>Report <code>/OAA/ATP_DELTA_CLEANER</code></p>		<code>/OAA/ATP Execute</code> <code>W_OAA_PREC Delete</code> <code>W_OAA_VEND Delete</code>
		<p>Manually replicates rough stock indicators.</p> <p>Reports <code>/OAA/ATP_RSI_GENERATION</code> and <code>/OAA/ATP_RSI_GENERATION_SC</code></p>		<code>/OAA/RSI Create or generate / Change / Delete / Execute</code>
		<p>Manually generates and replicates ATP snapshot for DCs and vendors.</p> <p>Sales channel mode: report <code>/OAA/ATP_SNP_CALC</code></p> <p>OAA profile mode: reports <code>/OAA/ATP_CALL_PRECALC</code> and <code>/OAA/ATP_VENDOR_CALC</code></p>		<code>W_OAA_PREC Execute</code> <code>W_OAA_VEND Create or generate / Display</code>

System	Type of User	Description	User Parameters	Authorizations
		If the reports are to be executed in batch mode, authorizations for the batch user must include those mentioned on the right.		
SAP S/4HANA or SAP Retail	Administrator	Manually replicates site data from SAP S/4HANA or SAP Retail to SAP Customer Activity Repository. Report OAA_IDOC_SITE_REPLICATION		W_OAA_SITE <i>Execute</i>
		Manually determines geocoordinates for OAA sources (SAP Retail only). Report OAA_CREATE_GEOCODING		W_OAA_SITE <i>Execute</i>
		Manually deletes vendor stock entries. Report OAA_VEND_STOCK_DELETION		W_OAA_VEND <i>Delete</i>
		If the reports are to be executed in batch mode, authorizations for the batch user must include those mentioned on the right.		
SAP HANA	ABAP database user	This user needs authorization to create database triggers in SAP Customer Activity Repository. Report /OAA/CREATE_TRIGGERS		-
SAP Customer Activity Repository	One or more business users for role <i>Omnichannel Manager</i>	Omnichannel managers maintain data in the SAP Fiori apps relevant for OAA.		/OAA/NETW <i>Execute</i> /OAA/SRCST <i>Execute</i> /OAA/SC <i>Execute</i> /OAA/SRC_A <i>Execute</i> (set parameter OAA_SOURCE to *)
SAP Customer Activity Repository	One or more business users for role <i>Store Manager</i> or <i>DC Manager</i>	Store managers and DC managers maintain data in the <i>Manage Sources</i> SAP Fiori app.		/OAA/SRC_A <i>Execute</i> (for parameter OAA_SOURCE, select the sources that the respective manager or group of managers is responsible for)

5.4.4 Authorization Requirements for Omnichannel Promotion Pricing (OPP)

OPP delivers the role `/ROP/OPP_ADMINISTRATOR` as a template. You can copy this template to your own role (or several roles), and add authorization values as required.

Roles

Table 18:

Role	Description
<code>/ROP/OPP_ADMINISTRATOR</code>	<p>This role performs the following administrative activities for OPP that are usually not done by normal users::</p> <ul style="list-style-type: none"> Transforming offers into OPP promotions using the report <code>/ROP/R_OFFER_TRANSFORM</code>. Displaying of the application log that is written during the transformation of offers into OPP promotions using, for example, the report <code>/ROP/R_OFFER_APPL_LOG</code>. Executing the outbound processing of regular prices and OPP promotions with the Data Replication Framework (DRF). Several deletion activities, for example, the deletion of the replication status information for OPP promotions using report <code>/ROP/R_DELETE_PROMO_REPLSTATUS</code>.

The transaction to transform offers into OPP promotions (`/ROP/OFFER_TRANSFORM`) does not use new authorization objects. Instead, it checks mainly the following authorization objects:

Table 19:

Authorization Object	Description
<code>S_TCODE</code>	The user must have this authorization to start transaction <code>/ROP/OFFER_TRANSFORM</code> .
<code>/DMF/OFRSO</code>	The user must have this authorization to display offers in the related sales organization and the related distribution channel.

5.5 Session Security Protection

To increase security and prevent access to the SAP logon ticket and security session cookie(s), we recommend activating secure session management.

We also highly recommend using SSL to protect the network communications where these security-relevant cookies are transferred.

Session Security Protection on the AS ABAP

To activate session security on the AS ABAP, set the corresponding profile parameters and activate the session security for the client(s) using the transaction SICF_SESSIONS.

For more information, a list of the relevant profile parameters, and detailed instructions, see *Activating HTTP Security Session Management on AS ABAP* in the AS ABAP security documentation.

5.6 Network and Communication Security

Your network infrastructure is extremely important in protecting your system.

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

The network topology for the SAP Customer Activity Repository application 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 the SAP Customer Activity Repository. Details that specifically apply to the SAP Customer Activity Repository application are described here.

Communication Channel Security

The table below shows the communication paths used by SAP Customer Activity Repository, the protocol used for the connection, and the type of data transferred.

Table 20: Communication Paths

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

Communication Path	Protocol Used	Type of Data Transferred	Data Requiring Special Protection
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
Application server to external receiver	IDoc	Application data records	Omnichannel promotion pricing data, including regular prices and OPP promotions.

DIAG and RFC connections can be protected using Secure Network Communications (SNC). HTTP connections are protected using the Secure Sockets Layer (SSL) protocol. SOAP connections are protected with Web services security.

For more information, see *Transport Layer Security* the *SAP NetWeaver Security Guide*.

➔ Recommendation

We strongly recommend using secure protocols (SSL, SNC) whenever possible.

For more information, see *Transport Layer Security* and *Web Services Security* in the *SAP NetWeaver Security Guide*.

Network Security

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

- SAP NetWeaver Security Guide
- SAP Supply Chain Management Security Guide
- SAP Supplier Relationship Management Security Guide
- SAP ERP Central Component Security Guide
- SAP S/4HANA Security Guide
- SAP Customer Relationship Management Security Guide
- SAP Hybris Marketing Security Guide

If you are implementing the Loss Prevention Analytics functionality, you should also refer to the following documentation:

- Security Guide for SAP NetWeaver BW
- Portal Security Guide

To locate the security guides listed above, go to SAP Help Portal (<https://help.sap.com/viewer/index>), choose your product and then choose Security Information. For example, https://help.sap.com/viewer/p/SAP_NETWEAVER_740 ► [Security](#) ► [SAP NetWeaver Security Guide](#) ►.

Ports

SAP Customer Activity Repository runs on SAP NetWeaver and uses the ports from the AS ABAP. For more information, see the topics for *AS ABAP Ports* in the corresponding [SAP NetWeaver Application Server ABAP Security Guide](#). For other components, for example, SAPinst, SAProuter, or the SAP Web Dispatcher, see also the document *TCP/IP Ports Used by SAP Applications*, which is located on SAP Community Network (SCN) at <http://scn.sap.com/community/security> under ► [Infrastructure Security](#) ► [Network and Communication Security](#) ►.

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 Customer Activity Repository for connecting incoming datasources and outgoing destinations. SAP Customer Activity Repository does not provide any pre-configured 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 Customer Activity Repository; 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 Customer Activity Repository. 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 Customer Activity Repository, you must do the following:

- Define SAP Customer Activity Repository 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 Customer Activity Repository

For outbound communication from SAP Customer Activity Repository, you must do the following:

- Define all target destinations within SAP Customer Activity Repository, for example, as an RFC destination with a specific user identified for the target system.
- Configure SAP Customer Activity Repository 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 the SAP Customer Activity Repository application.

Table 21: Connection Destinations

Destination	Delivered	Type	User, Authorizations	Description
Customer-defined in external system	No	RFC	<ul style="list-style-type: none"> • S_ICF (for client system) • S_RFC (for server system) • S RFCACL (for trusted systems only) • 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: <ul style="list-style-type: none"> • S_SERVICE Web Service Roles: <ul style="list-style-type: none"> • SAP_BC_WEB-SERVICE_CONSUMER 	Inbound transaction data from Web Service call (from POS)
Customer-defined in external system	No	tRFC	<ul style="list-style-type: none"> • S_ICF (for client system) • S_RFC (for server system) • S RFCACL (for trusted systems only) • W_POS_TIBQ (Activity '01' Create) 	Inbound transaction data from IDOC through ALE (such as for SAP Retail, etc.)

Destination	Delivered	Type	User, Authorizations	Description
Customer-defined in Customizing	No	RFC	<p>RFC Authorization Objects:</p> <ul style="list-style-type: none"> • S_ICF (for client system) • S_RFC (for server system) • S_RFCACL (for trusted systems only) <p>ALE Authorization Objects:</p> <ul style="list-style-type: none"> • B_ALE_RECV • B_ALE_REDU <p>Authorization Objects:</p> <ul style="list-style-type: none"> • W_POS_AGGP <p>Roles:</p> <ul style="list-style-type: none"> • /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 Customer Activity Repository system	No	HTTP(S)	<p>Web Service Authorization Objects:</p> <ul style="list-style-type: none"> • S_SERVICE <p>Web Service Roles:</p> <ul style="list-style-type: none"> • SAP_BC_WEB-SERVICE_CONSUMER <p>Authorization Objects:</p> <ul style="list-style-type: none"> • W_POS_AGGP <p>Roles:</p> <ul style="list-style-type: none"> • /POSDW/ADMINISTRATOR • /POSDW/SALES_AUDIT 	Outbound transaction data from Web Service call resulting from Task Processing (such as for SAP CRM)

Destination	Delivered	Type	User, Authorizations	Description
Customer-defined in external system	No	tRFC	RFC Authorization Objects: <ul style="list-style-type: none"> • S_ICF (for client system) • S_RFC (for server system) • S_RFCACL (for trusted systems only) Authorization Objects: <ul style="list-style-type: none"> • W_POS_TIBQ (Activity '01' Create) 	Outbound transaction data from IDOC resulting from Task Processing (such as for SAP Retail, etc.)

5.7 Internet Communication Framework Security

You should only activate those services that are needed for the applications running in your system. For the SAP Customer Activity Repository application (and specifically for the POS Data Transfer and Audit module), the following service is required:

Table 22:

Service	Description
POSTRANSACTERPBLKCRTRQ	Inbound POS Transactions Service

For Loss Prevention Analytics (LPA) services within the SAP NetWeaver Portal, the following services are required:

Table 23:

Service	Description
LPA_WDA_CASHIERLOOKUP	Cashier Lookup
LPA_WDA_TXN_VIEWER	Transaction Viewer
LPA_WDA_JOURNAL_VIEWER	Journal Viewer

You only need to activate these services if you are using LPA functionality. For more information, see SAP Note [1533599](#).

You activate these services using transaction SICF. If your firewall(s) use URL filtering, note the URLs used for the services and adjust your firewall settings accordingly.

For information about activating and deactivating ICF services, see *Activating and Deactivating ICF Services* in the *SAP NetWeaver Library* documentation.

For information about ICF security, see the *RFC/ICF Security Guide* within the *Security Guides for Connectivity and Interoperability Technologies* in the *SAP NetWeaver Security Guide*.

5.8 Data Storage Security

Data Storage

The SAP Customer Activity Repository application saves data in the SAP HANA database of the SAP system (configuration, master, transactional, and aggregation data). Data access for users is controlled through the standard SAP NetWeaver and SAP HANA authorization concepts (see the [Authorizations \[page 30\]](#) section).

The application makes use of data originating from other SAP systems (for example, SAP ERP, or SAP S/4HANA, and optionally SAP CRM or SAP Hybris Marketing). SAP Customer Activity Repository accesses data using SAP HANA read-only views included SAP HANA Content for SAP Customer Activity Repository, and optionally SAP HANA Live for SAP ERP. The data is protected through the implementation of the SAP HANA Live for Business Suite authorization concept, which relies on SAP HANA DB object and analytical privileges for users.

Data is not temporarily stored in the file system for any reason. For non-temporary data storage, see the subsequent section for information about file system storage for archived transactional and aggregation data.

Using Logical Path and File Names to Protect Access to the File System

The SAP Customer Activity Repository application can optionally save data in files in the file system (specifically for archiving purposes). Therefore, it is important to explicitly provide access to the corresponding files in the file system without allowing access to other directories or files (also known as directory traversal). This is achieved by specifying logical paths and file names in the system that map to the physical paths and file names. This mapping is validated at runtime and if access is requested to a directory (including subdirectories) that does not match a stored mapping, then an error occurs.

The following lists show the logical file names and paths used by the SAP Customer Activity Repository application and the programs to which these file names and paths apply:

Logical File Names Used in This Application

The following logical file names have been created in order to enable the validation of physical file names:

- ARCHIVE_DATA_FILE_POSDW
 - Programs using this logical file name and parameters used in this context:
 - Archiving object / POSDW/TL
 - Program / POSDW/ARCHIVE_READ
 - Program / POSDW/ARCHIVE_WRITE
 - Program / POSDW/ARCHIVE_DELETE
 - Program / POSDW/ARCHIVE_RELOAD
 - Parameters used in this context ('_' between parameters, and suffix of '_TL.ARCHIVE'):
 - < PARAM_1 >
 - < PARAM_3 >
 - < DATE >
 - < TIME >

- < PARAM_2 >
- ARCHIVE_DATA_FILE_POSDW2
 - Programs using this logical file name:
 - Archiving object /POSDW/AGG
 - Program /POSDW/ARCHIVE_READ_AGGREGATE
 - Program /POSDW/ARCHIVE_WRITE_AGGREGATE
 - Program /POSDW/ARCHIVE_DELE_AGGREGATE
 - Parameters used in this context ('_' between parameters, and suffix of '_AG.ARCHIVE'):
 - < PARAM_1 >
 - < PARAM_3 >
 - < DATE >
 - < TIME >
 - < PARAM_2 >
- ARCHIVE_DATA_FILE_POSDW_F
 - Programs using this logical file name:
 - Archiving object /POSDW/TLF
 - Program /POSDW/ARCHIVE_READ_HDB_F
 - Program /POSDW/ARCHIVE_WRITE_HDB_F
 - Program /POSDW/ARCHIVE_DELETE_HDB_F
 - Program /POSDW/ARCHIVE_RELOAD_HDB_F
 - Parameters used in this context ('_' between parameters, and suffix of '.ARCHIVE'):
 - < PARAM_1 >
 - < PARAM_3 >
 - < DATE >
 - < TIME >
 - < PARAM_2 >

Logical Path Names Used in This Application

The logical file names listed above all use the logical file path `ARCHIVE_GLOBAL_PATH`.

Activating the Validation of Logical Path and File Names

These logical paths and file names, as well as any subdirectories, are specified in the system for the corresponding programs. For downward compatibility, the validation at runtime is deactivated by default. To activate the validation at runtime, maintain the physical path using the transactions `FILE` (client-independent) and `SF01` (client-specific). To find out which paths are being used by your system, you can activate the corresponding settings in the Security Audit Log.

For more information, see:

- *Logical File Names* in the *SAP NetWeaver Library*
- *Protecting Access to the File System* in the *SAP NetWeaver Application Server ABAP Security Guide*
- *Security Audit Log* in the *SAP NetWeaver Library*

Data Protection

The SAP Customer Activity Repository application does not support or require a Web Browser as its user interface, and therefore does not use cookies to store data on the front-end. Additionally, no data is stored on a client.

The application transactional data may contain sensitive data, in the form of credit card numbers, and so on, which are provided from outside systems. It is strongly recommended that all such data be encrypted at its source, remain encrypted when passed between systems, and remain encrypted within the SAP Customer Activity Repository's application database tables or file system. The following SAP Notes highlight historical product-related changes to support data encryption:

- [1151936](#) 
- [1053296](#) 
- [1041514](#) 
- [1032588](#) 

For business use-cases where the decryption of this type of data is required, specific authorizations are necessary and access is logged for auditing purposes. For more information, see the [Authorizations \[page 30\]](#) section.

5.9 Data Protection and Privacy

[Introduction \[page 64\]](#)

[Glossary \[page 65\]](#)

[User Consent \[page 66\]](#)

[Read Access Logging \[page 67\]](#)

[Information Report \[page 67\]](#)

[Deletion of Personal Data \[page 68\]](#)

[Change Log \[page 81\]](#)

[Enabling Data Protection and Privacy-Related Functionality \[page 82\]](#)

5.9.1 Introduction

Data protection is associated with numerous legal requirements and privacy concerns. In addition to compliance with general data privacy regulation, it is necessary to consider compliance with industry-specific legislation in different countries. SAP provides specific features and functions to support compliance with regards to relevant legal requirements, including data protection. SAP does not give any advice on whether these features and functions are the best method to support company, industry, regional, or country-specific requirements. Furthermore, this information does not give any advice or recommendation in regards to additional features that would be required in particular IT environments; decisions related to data protection must be made on a case-by-case basis, under consideration of the given system landscape and the applicable legal requirements.

i Note

In the majority of cases, compliance with applicable data protection and privacy laws will not be covered by a product feature. SAP software supports data protection compliance by providing security features and specific data protection-relevant functions, such as simplified blocking and deletion of personal data. SAP does not provide legal advice in any form. Definitions and other terms used in this document are not taken from any given legal source.

5.9.2 Glossary

Table 24:

Term	Definition
Personal data	Any information relating to an identified or identifiable natural person ("data subject"). An identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural, or social identity of that natural person.
Purpose	A legal, contractual, or in other form justified reason for the processing of personal data . The assumption is that any purpose has an end that is usually already defined when the purpose starts.
Blocking	A method of restricting access to data for which the primary business purpose has ended.
Deletion	The irreversible destruction of personal data .
Retention period	The period of time between the end of purpose (EoP) for a data set and when this data set is deleted subject to applicable laws. It is a combination of the residence period and the blocking period.
End of purpose (EoP)	A method of identifying the point in time for a data set when the processing of personal data is no longer required for the primary business purpose . After the EoP has been reached, the data is blocked and can only be accessed by users with special authorization (e.g. tax auditors).

Term	Definition
Sensitive personal data	<p>A category of personal data that usually includes the following type of information:</p> <ul style="list-style-type: none"> • Special categories of personal data such as data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade union membership and the processing of genetic data, biometric data, data concerning health or sex life or sexual orientation • Personal data subject to professional secrecy • Personal data relating to criminal or administrative offenses • Personal data concerning insurances and bank or credit card accounts
Residence period	<p>The period of time after the end of purpose (EoP) for a data set during which the data remains in the database and can be used in case of subsequent processes related to the original purpose. At the end of the longest configured residence period, the data is blocked or deleted. The residence period is part of the overall retention period.</p>
Where-used check (WUC)	<p>A process designed to ensure data integrity in the case of potential blocking of business partner data. An application's where-used check (WUC) determines if there is any dependent data for a certain business partner in the database. If dependent data exists, this means the data is still required for business activities. Therefore, the blocking of business partners referenced in the data is prevented.</p>
Consent	<p>The action of the data subject confirming that the usage of his or her personal data shall be allowed for a given purpose. A consent functionality allows the storage of a consent record in relation to a specific purpose and shows if a data subject has granted, withdrawn, or denied consent.</p>

5.9.3 User Consent

SAP Customer Activity Repository has no requirements involving personal data, although personal data may be provided to SAP Customer Activity Repository by retailers based on their own requirements. It is assumed that data provided to SAP Customer Activity Repository has been obtained with any necessary user consent already provided. If consent for use of specific data has not been obtained, then the applicable data provided (for example, within the data provided within any POS Data Transfer and Audit inbound APIs) should be limited by the retailer to only that which is permitted for their use.

It is expected that consumers of SAP Customer Activity Repository data, whether through POS Data Transfer and Audit outbound APIs or SAP HANA content, will ensure that any follow-on activities triggered from this data will consider the consent required for these follow-on activities.

5.9.4 Read Access Logging

Read Access Logging (RAL) is used to monitor and log read access to sensitive data. This data may be categorized as sensitive by law, by external company policy, or by internal company policy. These common questions might be of interest for an application that uses Read Access Logging:

- Who accessed the data of a given business entity, for example a bank account?
- Who accessed personal data, for example of a business partner?
- Which employee accessed personal information, for example religion?
- Which accounts or business partners were accessed by which users?

These questions can be answered using information about who accessed particular data within a specified time frame. Technically, this means that all remote API and UI infrastructures (that access the data) must be enabled for logging.

Use

Fields defined as 'Personal' in these Customizing activities are tracked in the Read Access Log anytime their values are viewed by a user. You can even use these Customizing activities to mask the values of selected fields that appear in the Read Access Log itself.

For information on how read access logging is handled in SAP Customer Activity Repository, see [Enabling Data Protection and Privacy-Related Functionality \[page 82\]](#).

Read Access Logging is currently limited to the following channels, however:

- Remote Function Calls (sRFC, aRFC, tRFC, qRFC, bgFRC)
- Dynpro (dynpro fields, ALV Grid, ABAP List, F4)
- Web Dynpro
- Web services
- Gateway (for oData)

More Information

SAP Library for SAP NetWeaver on SAP Help Portal at https://help.sap.com/viewer/p/SAP_NETWEAVER
▶ [Choose relevant release](#) ▶ [SAP NetWeaver Security Guide](#) ▶ [Data Protection and Privacy](#) ▶ [Read Access Logging](#) ▶

5.9.5 Information Report

POS Transactions With Subject-Specific Personal Data

You can use the **POS Transactions With Subject-Specific Personal Data** report (transaction `/n/POSDW/DISP_DPD`) to see all POS transactions containing personal data for a specific subject, such as a customer. You can configure the report to search for transactions containing their personal data based on contact information they provided. You can also extend the report to search for their personal data in other custom fields. You can then use this data for further action, such as archiving or blocking the data about the customer.

Audit Report for Transaction Logs

You can use the Audit Report for Transaction Logs (`/POSDW/DISM`) to see when any personal or sensitive data about a subject was accessed and modified, and by whom.

For more information, see the report documentation for the transaction in the ABAP system.

Demand Data Foundation

The information stored for a business partner ID representing a customer or vendor is available for display. From your application server, use transaction code `NWBC` and navigate to the [Services](#) [Location Services](#) [Location](#). Search for the vendor or customer ID desired to display the stored information.

5.9.6 Deletion of Personal Data

- **Simplified Blocking and Deletion:** In addition to compliance with the general data protection regulation, it is necessary to consider compliance with industry-specific legislation in different countries. A typical potential scenario in certain countries is that personal data shall be deleted after the specified, explicit, and legitimate purpose for the processing of personal data has ended, but only as long as no other retention periods are defined in legislation, for example, retention periods for financial documents. Legal requirements in certain scenarios or countries also often require blocking of data in cases where the specified, explicit, and legitimate purposes for the processing of this data has ended, but the data has to be retained in the database due to other legally defined retention periods. In some scenarios, personal data also includes referenced data. Therefore, the challenge for deletion and blocking is to first handle referenced data and finally other data, such as business partner data.
- **Deletion of personal data:** The handling of personal data is subject to applicable laws related to the deletion of such data at the end of purpose (EoP). If there is no longer a legitimate purpose that requires the use of personal data, it must be deleted. When deleting data in a data set, all referenced objects related to that data set must be deleted as well. It is also necessary to consider industry-specific legislation in different countries in addition to general data protection laws. After the expiration of the longest retention period, the data must be deleted.

SAP Customer Activity Repository might process personal data that is subject to the data protection laws applicable in specific countries as described in [SAP Note 1825544](#).

To enable even complex scenarios, SAP simplifies existing deletion functionality to cover data objects that are personal data by default. For this purpose, SAP uses SAP Information Lifecycle Management (ILM) to help you set up a compliant information lifecycle management process in an efficient and flexible manner. The functions that support the simplified blocking and deletion of personal data are not delivered in one large implementation, but in several waves. Scenarios or products that are not specified in SAP Note [1825608](#) (central Business Partner)

and SAP Note [2007926](#) (ERP Customer and Vendor) are not yet subject to simplified blocking and deletion. Nevertheless, it is also possible to destroy personal data for these scenarios or products. In these cases, you have to use an existing archival or deletion functionality or implement individual retention management of relevant business data throughout its entire lifecycle. The SAP Information Lifecycle Management (ILM) component supports the entire software lifecycle including the storage, retention, blocking, and deletion of data.

This product uses SAP ILM to support the deletion of personal data as described in the following sections:

SAP delivers an end of purpose check for the product.

SAP delivers a where-used check (WUC) for the product.

All applications register either an end of purpose check (EOP check) in the Customizing settings for the blocking and deletion of application data (for example, the customer and vendor master or the business partner) or a WUC. For information about the Customizing of blocking and deletion for this product, see Configuration: Simplified Blocking and Deletion.

ILM-Enabled Archiving Objects

An ILM-enabled archive object can support the timely deletion of personal data by considering all relevant retention policies defined for the given object.

SAP Customer Activity Repository delivers the following objects for such use:

Table 25:

Archive Object	ILM Object
/POSDW/AGG	POSDW_AGG
/POSDW/TLF	POSDW_TLF

It is assumed that the lifecycle management of all replicated data will take place in the source system, as SAP Customer Activity Repository is not considered the owner of such types of data. Properly configured SLT replication ensures that any data that has been deleted or archived in its source system is removed from all replica databases automatically. If a retailer chooses to employ a different type of configuration than the expected approach, then additional efforts will need to be addressed by the retailer to ensure that personal data is deleted in accordance with data protection policies for personal data.

For more information about SAP ILM, see SAP Library for SAP ERP on SAP Help Portal at https://help.sap.com/viewer/p/SAP_ERP ► <choose relevant release> ► Application Help ► SAP ERP Cross-Application Functions ► Cross-Application Components ► SAP Information Lifecycle Management ►.

End of Purpose Check (EoP check)

An end of purpose check determines whether data is still relevant for business activities based on the retention period defined for the data. The retention period of data consists of the following phases:

- **Phase one:** The relevant data is actively used.

- **Phase two:** The relevant data is actively available in the system.
- **Phase three:** The relevant data needs to be retained for other reasons.

For example, processing of data is no longer required for the primary business purpose, but to comply with legal rules for retention, the data must still be available. In phase three, the relevant data is blocked.

Blocking of data prevents the business users of SAP applications from displaying and using data that may include personal data and is no longer relevant for business activities.

Blocking of data can impact system behavior in the following ways:

- **Display:** The system does not display blocked data.
- **Change:** It is not possible to change a business object that contains blocked data.
- **Create:** It is not possible to create a business object that contains blocked data.
- **Copy/Follow-Up:** It is not possible to copy a business object or perform follow-up activities for a business object that contains blocked data.
- **Search:** It is not possible to search for blocked data or to search for a business object using blocked data in the search criteria.

It is possible to display blocked data if a user has special authorization; however, it is still not possible to create, change, copy, or perform follow-up activities on blocked data.

Expected Behavior Within SAP Customer Activity Repository

The scenarios used within SAP Customer Activity Repository do not enforce any mandatory data integrity constraints relating to personal data or references to personal data through master data objects. For example, within POS Transfer and Audit, there may exist a business partner number that has been provided within a TLOG transaction, but there is no validation on the validity of such a reference nor any possibility of obtaining more information relating to this referenced business partner. Retailers have the ability to not provide such types of data in cases where the data is considered as blocked from use. As such, POS Data Transfer and Audit is considered as relevant for EoP checking.

Due to the fact that Point-Of-Sale transactions cannot be prevented from being created as a reaction to any data references to external systems' master data objects, such as Business Partner, Customer, or Vendor, it is not possible to enforce the proposed typical system behaviors when there is a blocked reference (preventing the display/change/creation/copy of data referencing a blocked reference). Regardless, the transaction logs must be processed with the original data provided from the Point-Of-Sale system, and transferred to other retail applications.

Within Point-Of-Sale Data Transfer and Audit, customer determination carried out through SAP CRM Loyalty Card or SAP yMKT Contact Facet only considers data that is not blocked from use.

Within SAP HANA content for SAP Customer Activity Repository, views exposing personal data are expected to follow a similar approach to minimize the use of blocked data. For example, views exposing transactional data involving the SAP CRM Business Partner object through its corresponding SAP ECC or S/4HANA Customer object will restrict results to only those where the SAP CRM Business Partner is not considered as blocked from use. This is accomplished through SAP HANA content modeling techniques. It should be noted that if auditing of replicated data that is considered blocked from use is required (where a special authorization is needed), that it would be at the retailers' discretion to implement such an approach, as it is assumed that the originating system would be the only system that would deliver this type of support, if required. Existing views exposing master data objects exposing personal information now restrict the results to only those entries which are not considered as blocked

from use. New versions of such views are available for cases where unrestricted results are needed along with the necessary blocking status information, so that appropriate data handling can be supported.

Views affected by blocking

The following table provides a list of views affected by blocking. In general views having data that could be relevant for blocking will have implemented blocking. This is the case for the views listed below. Any view named as *Unrestricted or *_UNRESTRICTED implies that blocking would be relevant but it is not being done. Blocking-relevant information is provided by the view.

You can consult the following views as examples of how to incorporate blocking into your use of TLOG data. Further details are provided in the view's entry in the table below.

- sap.is.retail.car/POSSalesQuery
- sap.is.retail.car.crm/MULTICHANNEL_BUSINESS_PARTNER_SALE_ITEM
- sap.is.retail.car.cuan/POSSales_Hybris_Marketing

Table 26:

View Name Assumes private views are omitted	Data Relevance			Example of Master Data Objects Involved	
	Data Type: MD = Master Data TD = Transaction Data	Affected by Blocking (Added)	Affected by Blocking (Indirectly)	Customer -Based	Vendor-Based
SAP HANA Live views					
Packages:					
<ul style="list-style-type: none"> • sap.is.retail.ecc • sap.is.retail.s4h 					
AddressTimeZone	MD	X (Direct)			
BillingDocument-Condition	TD	X		SoldToParty, Payer-Party	
BillingDocument-Header	TD	X		SoldToParty, Payer-Party	
BillingDocumentItem	TD	X		SoldToParty, Payer-Party	
CustomerBasic-Data	MD	X (Direct)		Customer	
MaterialProcurementArrangement	MD	X			Vendor
SalesDocument-Header	TD	X		SoldToParty	

View Name Assumes private views are omitted	Data Relevance			Example of Master Data Objects Involved	
	Data Type: MD = Master Data TD = Transaction Data	Affected by Blocking (Added)	Affected by Blocking (Indirectly)	Customer -Based	Vendor-Based
SalesDocumentItem	TD	X		SoldToParty	
SalesDocumentScheduleLine	TD	X		SoldToParty	
Vendor	MD	X (Direct)		Customer	Vendor
SAP Customer Activity Repository Views					
Packages:					
<ul style="list-style-type: none"> • sap.is.retail.car • sap.is.retail.car_s4h 					
BillingDocumentHeader	TD		X	SoldToParty	
BillingDocumentItem	TD	X		SoldToParty	
BillingDocumentItemArticleHierarchyQuery	TD	X			
BillingDocumentItemQuery	TD	X		SoldToParty, SoldToPartyName	
MultiChannelSalesItemOCdetermination	TD		X	SoldToParty	
MultiChannelSales	TD		X	CustomerNumber	
MultiChannelSales_V2	TD		X	CustomerNumber	
MultiChannelSalesQuery	TD	X		Customer, CustomerName	

View Name Assumes private views are omitted	Data Relevance			Example of Master Data Objects Involved	
	Data Type: MD = Master Data TD = Transaction Data	Affected by Blocking (Added)	Affected by Blocking (Indirectly)	Customer -Based	Vendor-Based
POSSalesQuery Where blocking is done based on SAP ECC Customer referenced within TLOG item CustomerNumber (as an SAP ECC Customer that has been mapped to a SAP CRM BP), and uses an SQL left outer join to a view that does expose blocked SAP ECC Customers so that results can be explicitly filtered at the last step in the internal view execution.	TD	X		Customer, CustomerName	
SalesOrderItem	TD	X		SoldToParty	
CAR NLS views Packages: <ul style="list-style-type: none"> • sap.is.retail.car.nls • sap.is.retail.car_s4h.nls 					
MultiChannelSalesPruning_NLS	TD		X	CustomerNumber	
SAP Customer Activity Repository Smart Business Fiori views Package: sap.hba.t.rtl.car.mcsa.v					
BillingDocumentItem	TD	X			

View Name Assumes private views are omitted	Data Relevance			Example of Master Data Objects Involved	
	Data Type: MD = Master Data TD = Transaction Data	Affected by Blocking (Added)	Affected by Blocking (Indirectly)	Customer -Based	Vendor-Based
ArticleNetSales ArticleNetSales-Query			X		
AverageTransactionValueItemOverview AverageTransactionValueBase AverageTransactionValueByCategory AverageTransactionValueByCity AverageTransactionValueByCountry AverageTransactionValueByOC AverageTransactionValueByRegion AverageTransactionValueByStore AverageTransactionValueCurPeriodQuery AverageTransactionValueHdr			X		

View Name Assumes private views are omitted	Data Relevance			Example of Master Data Objects Involved	
	Data Type: MD = Master Data TD = Transaction Data	Affected by Blocking (Added)	Affected by Blocking (Indirectly)	Customer -Based	Vendor-Based
GrossMargin			X		
GrossMarginBase					
GrossMarginCurPerdQuery					
GrossMarginHdrQuery					
GrossMarginTopBottomByCountry					
GrossMarginTopBottomByRegion					
GrossMarginQuery					
GrossMarginTopBottomByCategory					
GrossMarginTopBottomByCity					

View Name Assumes private views are omitted	Data Relevance			Example of Master Data Objects Involved	
	Data Type: MD = Master Data TD = Transaction Data	Affected by Blocking (Added)	Affected by Blocking (Indirectly)	Customer -Based	Vendor-Based
NetSalesTopBottomByStore NetSales NetSalesBase NetSalesCurPerdQuery NetSalesHdrQuery NetSalesQuery NetSalesTopBottomByCategory NetSalesTopBottomByCity NetSalesTopBottomByCountry NetSalesTopBottomByRegion NetSalesTopBottomByStore			X		
NumberOfSalesItemsPerTransactionBase NumberOfTransactionsBase NumberOfTransactionsItemOverview			X		
GetMultiChannelSalesConverted			X		
Integration views					
Package: sap.hba.t.rtl.car.int.v					

View Name Assumes private views are omitted	Data Relevance			Example of Master Data Objects Involved	
	Data Type: MD = Master Data TD = Transaction Data	Affected by Blocking (Added)	Affected by Blocking (Indirectly)	Customer -Based	Vendor-Based
MultiChannelSalesOrdersQuery	TD	X		CustomerNumber	
MultiChannelSalesQuery	TD		X		
CAR CRM views					
Packages:					
<ul style="list-style-type: none"> • <code>sap.is.retail.car.crm</code> • <code>sap.is.retail.car_s4h.crm</code> 					
CRMBpSIsItem	TD		X	CUSTOMER_NUMBER	
CRMBusinessPartnerAddress	MD	X		BusinessPartnerid CustomerNumber	
CRMPosltnLoy	TD	X		CUSTOMER_NUMBER SOLD_TO_PARTY	
CRMPosltnSIs	TD	X		CUSTOMER_NUMBER SOLD_TO_PARTY	
CRMPosLoySIs	TD	X		CUSTOMER_NUMBER SOLD_TO_PARTY	
CRM_BUSINESS_PARTNER_INFO	MD		X	BUSINESS_PARTNER_ID CUSTOMER_NUMBER	

View Name Assumes private views are omitted	Data Relevance			Example of Master Data Objects Involved	
	Data Type: MD = Master Data TD = Transaction Data	Affected by Blocking (Added)	Affected by Blocking (Indirectly)	Customer -Based	Vendor-Based
MULTICHANNEL_BUSINESS_PARTNER_SALE_ITEM Where blocking is done based on SAP CRM Business Partner referenced within TLOG item CustomerNumber (as an SAP ECC Customer that has been mapped to a SAP CRM BP) and SAP ECC sales order item SoldToParty, and uses an SQL inner join to a view that does not expose blocked SAP CRM Business Partners.	TD		X	BUSINESS_PARTNER_ID	
POSDM views related to CRM data Package: sap.is.retail.posdm.crm					
CRMBusinessPartner	MD	X		BusinessPartnerId CustomerNumber	
CAR Hybris Marketing views Packages: <ul style="list-style-type: none"> • sap.is.retail.car.cuan • sap.is.retail.car_s4h.cuan 					
BillingDocument_Hybris_Marketing	TD	X		SAPHybrisMarketingContactKey	

View Name Assumes private views are omitted	Data Relevance			Example of Master Data Objects Involved	
	Data Type: MD = Master Data TD = Transaction Data	Affected by Blocking (Added)	Affected by Blocking (Indirectly)	Customer -Based	Vendor-Based
MultiChannelSales-ByTargetGroupPromotionQuery	TD		X	CustomerNumber	
MultiChannelSales-WithTargetGroup	TD	X		CustomerNumber	
MultiChannel-Sales_Hybris_Marketing	TD		X	SAPHybrisMarketingContactKey	
POSSales_Hybris_Marketing Where blocking is done based on SAP yMKT Contact Facet referenced within TLOG item CustomerNumber (as an SAP yMKT Contact Facet Key) , and uses an SQL left outer join to a view that does expose blocked/ obsolete SAP yMKT Contact Facets so that results can be explicitly filtered at the next step in the internal view execution.	TD	X		SAPHybrisMarketingContactKey	
SegmentationTargetGroup	MD	X		ERPCustomer-Number	
POSDM views related to Hybris Marketing data					
Package: sap.is.retail.posdm.cuan					

View Name Assumes private views are omitted	Data Relevance			Example of Master Data Objects Involved	
	Data Type: MD = Master Data TD = Transaction Data	Affected by Blocking (Added)	Affected by Blocking (Indirectly)	Customer -Based	Vendor-Based
INTERACTION_CONTACT_FACET	MD	X		CONTACT_KEY FACET_ID_KEY IC_FACET_ID	

It is assumed that in scenarios where no personal data is present in the exposed results of a view, it is acceptable that no further data restrictions would be needed in order to support retailers' reporting needs such as for period-over-period sales comparisons and so forth.

Retailers must take care to ensure that any custom SAP HANA content created based on SAP HANA content for SAP Customer Activity Repository adheres to similar approaches to comply with any legal requirements relating to personal data.

Expected Behavior Within Demand Data Foundation (DDF)

DDF imports the Customer and Vendor Business Partner (BP) objects to allow consuming applications to plan. The scenario for DPP is when an SAP ERP application sends data to an application in SAP Customer Activity Repository applications bundle and has requested a Business Partner ID (vendor or customer) to be blocked or masked. This is not applicable for 3rd party source system. When DRFOut is executed for customer or vendor (outbound implementation PCUST or PVEN) data, it can contain a Block Status Flag on. The location import process looks for this status and masks the appropriate Customer and Vendor Business Partner ID and names in the DDF tables.

There are prerequisite Customizing activities in order to use this DPP functionality. In addition, a BAdI has been introduced so the consuming applications can add specifics for their application to be run after the import. These activities are in the [SAP Customizing Implementation Guide](#) accessed using transaction code SPRO. Navigate to structure node [Customer Activity Repository](#) ▶ [Demand Data Foundation](#) ▶ [Data Maintenance](#) ▶ [Data Protection and Privacy](#) ▶ to view the activities and associated documentation.

Another case for deletion of personal data is when a user has requested to be forgotten. Users that are created in the system are also created as Business Partner IDs. The User ID in CARAB screens and data sources are usually saved in a *Created By* or *Changed By* field. This requirement is fulfilled on the DDF data by using a transaction code that will run this request. Transaction code /DMF/PURGE_USER_ID executes report /DMF/PURGE_CREATEDBY_CHANGEDBY. An authorization object is required to run the report. To do this, use transaction code SE80 and choose Development Object /DMF/PURGE. Update the object by selecting the [Permitted Activities](#) button, select [Activity 51](#) and save.

1. To process the user mask request, execute transaction code /DMF/PURGE_USER_ID. Enter the User ID to be masked. The following fields are masked for the User ID.

- /DMF/CHANGED_BY
 - /DMF/CREATED_BY
 - /PRM/CREATED_BY
 - /PRM/CHANGED_BY
 - /RAP/CREATED_BY
 - /RAP/CHANGED_BY
 - /OAA/CREATED_BY
 - /OAA/CHANGED_BY
2. You should verify any entry containing the User ID is removed from log files or an exception monitor by performing steps a. and b..
 1. Purge exceptions from the exception monitor. Use transaction code `NWBC` to access [Services](#) > [Mass Maintenance Services](#) > [Purging Exceptions from the Database](#).
 2. Search the standard application logs using transaction code `SLG1` to search for existence of the User ID, and `SLG2` to delete the records.

Where-Used Check (WUC)

A where-used check is a simple check to ensure data integrity in case of potential blocking. The WUC for this product checks whether any dependent data for a customer, vendor, or central business partner (cBP) exists in the respective table. If dependent data exists, that is, if the data is still required for business activities, the system does not block that specific customer, vendor, or cBP.

If you still want to block the data, the dependent data must be deleted by using the existing archival and deletion tools or by using another customer-specific solution.

SAP Customer Activity Repository does not deliver a WUC at this time.

5.9.7 Change Log

Personal data is subject to frequent changes. Therefore, for revision purposes or as a result of legal regulations, it may be necessary to be able to track the changes made to this data. If these changes are logged, you can check which employee made which change and when at any time. It is also possible to analyze errors in this way. You can enter changes to infotype data records as change documents. You can create change documents for all infotypes that are used in Personnel Administration, Time Management, Payroll, and Applicant Management. You can use a report to display these documents. The report name you use will depend on your product. Logging data changes within the Data Dictionary is usually unnecessary. You can archive the infotype change documents. An archive can be displayed only if it was created using Archive Administration (transaction SARA). For more information, see [HR Archiving](#)

5.9.8 Enabling Data Protection and Privacy-Related Functionality

Use

SAP Customer Activity Repository supports data protection by providing updated functions that allow you to mask select fields and track when anyone accesses them.

Prerequisites

To enable or use the data protection features in SAP Customer Activity Repository, the `/POS DW/DPP_SECURITY` role is required in all cases. Additionally, there are other authorization requirements a user will need to perform functions such as running reports or making changes to data protection-related Customizing settings. The following chart shows the various functions that SAP Customer Activity Repository provides to support data protection and the specific authorization elements required to use them.

Caution

The `/POS DW/DPP_SECURITY` role is vital to the functions related to data protection and privacy. Failure to assign this role to a user may result in unintended data being available to them.

Table 27: Authorization Requirements to enable and use Data Protection and Privacy Functions

DPP-Related Entity	Description	Transaction or Command to Generate	DPP Relevance	Authorization Requirements
Customizing Activities	<ul style="list-style-type: none"> • Field Selection Profile • Maintain TLOG Customer Enhancement Field Mapping 	SPRO	Customizing activities that allow you to control actions on selected fields, or how their output should be handled. For example, you can mask field values that would normally appear unmasked in the <i>Audit Report for Transaction Logs</i> , the read access log, or in the POS Workbench.	<p>Role = /POS DW/DPP_SECURITY</p> <p>The following authorization objects are required to work with this Customizing activity:</p> <ul style="list-style-type: none"> • W_POS_FSPR is required to associate a user with a specific field profile. The value of the profile number is specified in field /POS DW/FSP • W_POS_DPPV is required to perform the task of selecting fields for masking in POS Workbench and in the <i>Audit Report for Transaction Logs</i>. Activity = 23 [Maintain Field Selection Profile]
Report	POS Transactions with Subject-Specific Personal Data Report	/n/POS DW/DISP_DP D	Allows you to search the transaction log for personal information on a specific subject using their name, customer number, or other contact information as search criteria	<p>Role = /POS DW/DPP_SECURITY</p> <p>Authorization object = W_POS_DPPV</p> <p>Activity = 04 [Display]</p>
Application Log	<p>Audit Report for Transaction Logs</p> <div style="background-color: #fff9c4; padding: 5px; border: 1px solid #ccc;"> <p>i Note</p> <p>This report may also be referred to as the Modifications Report.</p> </div>	/n/POS DW/DISM	Updated to provide a filter that will only search for transactions with changes to personal data and to mask data for select fields according to their assigned field selection profile.	<p>Role = /POS DW/DPP_SECURITY</p> <p>Authorization object = W_POS_DPPV</p> <p>Activity = 03 [Display Masked Value]</p>

DPP-Related Entity	Description	Transaction or Command to Generate	DPP Relevance	Authorization Requirements
Application Log	Analyze Application Log Read Access Log	SLG1 Object: /POS DW/DPP <ul style="list-style-type: none"> Sub-object: RAL To see who viewed masked fields in the POS Workbench or in the Audit Report for Transaction Logs (modifications report) Sub-object = DISPLAY_PERSON DATA To see who had previously run the POS Transactions with Subject-Specific Personal Data Report 	Logs the following activities: <ul style="list-style-type: none"> When selected masked fields have been viewed by a user When unencrypted fields related to payments cards have been viewed When anyone runs the POS Transactions with Subject-Specific Personal Data Report 	Role = /POS DW/DPP_SECURITY Authorization object = S_APPL_LOG Activity = 03 [Display] Object = /POS DW/DPP Sub-object = * (Administrator)
Application Log	Evaluate Log Records Using Payment Card Access Read Access Log for Payment Cards	CCSEC_LOG_SHOW	Logs when encrypted payment card fields have been accessed and viewed by a user.	Authorization object = B_CCSEC Activity = 71 [Analyse]

DPP-Related Entity	Description	Transaction or Command to Generate	DPP Relevance	Authorization Requirements
SAP HANA views	<p>SAP HANA views in <code>sap.is.retail.car</code> and <code>sap.is.retail.car_s4h</code> packages:</p> <ul style="list-style-type: none"> • <code>DPPRelevantFieldsQuery</code> • <code>ProcessLogFieldValueChangeQuery</code> 		<p><code>DPPRelevantFieldsQuery</code>:</p> <p>This view provides the names of the fields which are flagged as personal in a user's assigned field selection profile.</p> <p><code>ProcessLogFieldValueChangeQuery</code>:</p> <p>This view allows users to see field value changes made in POS Workbench and masks the values of the <code>FieldValueOld</code> and <code>FieldValueNew</code> fields for fields that are flagged as personal based on data provided by the <code>DPPRelevantFieldsQuery</code> view.</p>	<p>You must ensure that users who will work with these views have the required field selection profile assigned to them and that required SAP HANA analytic privileges are created for them to access the SAP HANA views.</p> <p>Before creating the analytic privileges you must create metadata for the SAP HANA views as SAP no longer delivers the metadata for the views (due to technical limitations). Information on how to do this is provided in SAP Note 2551735.</p>

Customizing Settings for Encryption and Masking

The following section describes activities you may need to complete to enable your system to take advantage of enhanced masking features, depending on the fields you need to mask. SAP Customer Activity Repository provides Customizing settings that allow you to set masking for payment card types, such as debit cards and loyalty cards, and for additional fields that may be associated with them, such as the customer name or contact information. It also provides flexibility that allows you to set different masking logic for each payment instrument associated with the same payment card type.

You can make settings in three different Customizing activities to enable encryption or masking of personal or sensitive data in SAP Customer Activity Repository. You may need to make settings in all activities or only in some of them depending on your data and your masking requirements.

Relevant for fields related to payment cards

- Encryption/masking Customizing settings provided by SAP NetWeaver
SAP NetWeaver already provides your system with encryption and masking capabilities for payment card number fields that you can set through the [Make Security Settings for Payment Cards](#) Customizing activity

under [Cross-Application Components](#) > [Payment Cards](#) > [Basic Settings](#) > [Make Security Settings for Payment Cards](#). You can use these settings to turn on global payment card encryption and define masking for payment cards. When you use this setting, you set the encryption and masking rule for all payment instruments associated to this payment card type.

- Tender type Customizing settings
 - To enable the encryption of debit cards or credit cards, you must first define tender types for them in the [POS Data Management](#) > [POS Inbound Processing](#) > [POS Transaction](#) > [Define Tender Type](#) Customizing activity.
 - To enable the encryption of loyalty cards, you must define the loyalty card type in the [Loyalty Card type for Mask/Encryption](#) field in the [POS Data Management](#) > [POS Inbound Processing](#) > [General Settings](#) Customizing activity.
- In the [Field Selection Profile](#) Customizing activity under [POS Data Management](#) > [POS Inbound Processing](#), mark the required fields in their corresponding segments as personal, as required:
 - **Card number** of the credit card segment
 - **Account number** of the debit card segment
 - **Customer card number** of the loyalty card segment

The following table illustrates the system response when you make the settings in various combinations.

Table 28:

SAP NetWeaver Setting 'Make Security Settings for Payment Cards'	POSDT&A Setting 'Define Tender Type'	POSDT&A Setting 'Field Selection Profile'	Result
X	X	X	Precedence given to the POSDT&A Define Tender Type setting This setting overwrites any settings created in the SAP NetWeaver Make Security Settings for Payment Cards setting.
X	Not set	X	Precedence given to the SAP NetWeaver setting Make Security Settings for Payment Cards
Not set	X	X	Precedence given to the POSDT&A Define Tender Type setting

SAP NetWeaver Setting 'Make Security Settings for Payment Cards'	POSDT&A Setting 'Define Tender Type'	POSDT&A Setting 'Field Selection Profile'	Result
X	X	Not set	Precedence given to the POSDT&A <i>Define Tender Type</i> setting. This setting overwrites any settings created in the SAP NetWeaver <i>Make Security Settings for Payment Cards</i> setting.

Relevant for other fields

Settings for masking of non-payment cards fields

The Customizing for *Field Selection Profile* provides functions that allow you to mask non-payment fields that may contain personal or sensitive data.

Table 29:


Setting in Field Selection Profile Customizing	Result of Setting
<p><i>Mask in Log</i></p> <p>Relevant for the process log and the Audit Report for Transaction Logs</p>	<p>This setting masks the old and new values of a changed field in the <i>Audit Report for Transaction Logs</i> and in the PLOGF DB table.</p> <p>When you use this setting, you have the option of leaving some characters at the beginning and/or at the end of the field value unmasked. You can define this in the <i>At Start</i> and <i>At End</i> fields. The entire field is masked if you do not specify anything in these fields.</p> <div style="background-color: #fff9c4; padding: 5px;"> <p>i Note</p> <p>When this indicator is set, the system automatically sets the <i>Personal Data Flag</i> indicator as well.</p> </div> <div style="background-color: #fff9c4; padding: 5px;"> <p>⚠ Caution</p> <p>Once values are masked the original values of the fields can never be restored in the <i>Audit Report for Transaction Logs</i>, even if you deselect the <i>Mask in Log</i> option because the data is saved as masked in the PLOGF DB table.</p> </div>

Setting in Field Selection Profile Customizing	Result of Setting
<p><i>Personal Data Flag</i></p> <p>Relevant for the POS Workbench and for Read Access Logging (RAL)</p>	<p>This setting tells the system to log every instance when a defined field is viewed in POS Workbench to the read access log. This consists of writing an entry in the system application log SLOG1 with object name /POSDW/DEP and subobject name RAL).</p> <p>When you use this setting, you have the option of leaving some characters at the beginning and/or at the end of the field value unmasked. You can define this in the <i>At Start</i> and <i>At End</i> fields.</p>
<p><i>Mask Display</i></p> <p>Relevant for the POS Workbench</p> <p>Used in conjunction with the <i>Personal Data Flag</i> setting</p>	<p>This setting tells the system to mask the displayed value of a defined field in the following instances:</p> <ul style="list-style-type: none"> • POS Workbench • Audit Report for Transaction Logs <p>When you use this setting, you have the option of leaving some characters at the beginning and/or at the end <i>At Start</i> and <i>At End</i> fields.</p>
<p><i>Mask in RAL</i></p> <p>Relevant for Read Access Logging</p>	<p>Masks the value of a field that is logged in the read access log (application log). When you use this setting, you have the option of leaving some characters at the beginning and/or at the end of the field value unmasked. You can define this in the <i>At Start</i> and <i>At End</i> fields.</p>
<p><i>At Start</i></p>	<p>Defines how many characters to leave unmasked at the beginning of a field value</p>
<p><i>At End</i></p>	<p>Defines how many characters to leave unmasked at the end of a field value.</p>

Example of Settings in Field Selection Profile

The following table provides an illustration of the results you can expect to see for the *Cardholder Name* field with a value of **SMITHSON** when you use various combinations of the *Field Selection Profile* settings.

Table 30:

Mask in Log	Personal Data Flag	Mask Display	Mask in RAL	At Start	At End	Impact to / Masking Result	Field Value Masking Result
PLOG	Read Access Log	Workbench	Application log SLG1				
	X	X		2	3	Impact to: <ul style="list-style-type: none"> • POS Workbench • Audit Report for Transaction Logs Entry created in application log (RAL process) as soon as someone views the personal field	SM***SON  Caution This will completely expose the field value in the process log.
X	X*			2	2	In Workbench: Entry created in application log (RAL process) as soon as someone views the personal field	SMITHSON (No masking)

Mask in Log	Personal Data Flag	Mask Display	Mask in RAL	At Start	At End	Impact to / Masking Result	Field Value Masking Result
PLOG	Read Access Log	Workbench	Application log SLG1				
						In Audit Report for Transaction Logs: This scenario is not relevant for RAL since the values of the personal fields are masked permanently in the process log and they cannot be unmasked in the Audit Report for Transaction Logs.	SM****ON
X	X	X		2	2	In Audit Report for Transaction Logs: This scenario is not relevant for RAL since the values of the personal fields are masked permanently in the process log and they cannot be unmasked in the Audit Report for Transaction Logs.	SM****ON

Mask in Log	Personal Data Flag	Mask Display	Mask in RAL	At Start	At End	Impact to / Masking Result	Field Value Masking Result
PLOG	Read Access Log	Workbench	Application log SLG1				
	X	X	X	1	1	PLOGF	<p>⚠ Caution</p> <p>This will completely expose the field value in the process log.</p>
						POS Workbench	S*****N
						Audit Report for Transaction Logs	S*****N
						Read Access Log	S*****N
	X					<p>For POS Workbench and Audit Report for Transaction Logs:</p> <p>Entry created in application log (RAL process) as soon as someone views the personal field</p>	<p>SMITHSON (No masking)</p> <p>⚠ Caution</p> <p>This will completely expose the field value in the process log.</p>

Mask in Log	Personal Data Flag	Mask Display	Mask in RAL	At Start	At End	Impact to / Masking Result	Field Value Masking Result
PLOG	Read Access Log	Workbench	Application log SLG1				
X	X					<p>In Workbench:</p> <p>Entry created in application log (RAL process) as soon as someone views the personal field</p>	*****
						<p>In Audit Report for Transaction Logs:</p> <p>This scenario is not relevant for RAL since the values of the personal fields are masked permanently in the process log and they cannot be unmasked in the Audit Report for Transaction Logs.</p>	

Other Encryption or Masking Requirements

Encryption of sensitive or personal data in the IDOC database

To set encryption of fields related to the **card number** in the credit card segment, the **account number** in the debit card segment, and the **customer card number** in the loyalty card segment ensure that the following BADl implementations are activated:

Table 31:

/POSDW/PCA_IDOC, MAP	To encrypt data and insert it into the IDOC database
----------------------	--

/POSDW/PCA_IDOC_CRYPT

To retrieve encrypted data from the IDOC database and decrypt it
--

Enable inbound processing to process encrypted bin data

These functions are used by a store's POS system to send data to SAP Customer Activity Repository. You will need to ensure that the processes that now encrypt loyalty card data are activated on your system. Run any of the following relevant functions according to the inbound process that you use.

Table 32:

BAPI function	/POSDW/BAPI_POSTR_CREATE
IDOC process	/POSDW/POSTR_CREATEMULTIPLE06
Web service	PointOfSaleTransactionERPBulkCreateRequest_In

5.10 Security for Additional Applications

The SAP Customer Activity Repository application does not have any additional third-party applications associated with it or delivered with it, nor does it have any mandatory dependencies on third-party applications.

For customer scenarios when third-party applications are optionally used, the relevant security settings for the applicable application should be considered in combination with those of the SAP Customer Activity Repository application.

5.11 Security for Omnichannel Promotion Pricing Using SAP HANA XS Advanced

Output Format of Response

To send a request to the promotion pricing service (PPS), you must add a header with one of the following content types:

- `application/xml` to send a request in XML format
- `application/json` to send a request in JSON format

The PPS processes the request and carries out the output encoding related to the content type. The response contains a header for the content type according to the content type of the request. The output encoding makes sure that cross side scripting cannot occur on caller side.

For more information about the output format of the PPS response, see the documentation of the OPP Client API on SAP Help Portal under <https://help.sap.com/viewer/p/CARAB> **▶** *<Version>* **▶** *Development* **▶** *Client API for Omnichannel Promotion Pricing* **▶**.

Restriction of Access Rights of the Database User to OPP Database Tables and Views

To access the database tables and views that contain price and promotion information in SAP Customer Activity Repository, you need a specific database user for the promotion pricing service powered by SAP HANA XS Advanced (XSA).

SAP recommends to restrict the access rights of this database user to read access for the required tables.

You can restrict the access rights by creating a role in SAP HANA that contains only the required database tables and views, and by assigning this role to the database user. The database user needs read access for the following database tables and views:

Table 33:

Name	Description
/ROP/ELIGIBILITY	Price derivation rule eligibility
/ROP/EX_ACT_PARM	External action parameter for OPP promotion
/ROP/EX_ACT_TEXT	External action text for OPP promotion
/ROP/MAM_ITEM	Mix-and-match price derivation item
/ROP/PRICE_RULE	Price derivation rule
/ROP/PROMO_BU	Business units relevant for OPP promotion
/ROP/PROMO_RULE	Promotion price derivation rule
/ROP/PROMO_TEXT	Language-dependent texts of an OPP promotion
/ROP/PROMOTION	OPP promotion
/DMF/BASE_PRC_V	View to read regular prices
/ROP/MERCH_SET	Product group

For more information about how to create a restricted database user in SAP HANA, see the *SAP HANA Administration Guide* on SAP Help Portal under https://help.sap.com/viewer/product/SAP_HANA_PLATFORM/ **▶** *<Version>* **▶** *Administration* **▶** *SAP HANA Administration Guide* **▶** *Security Administration* **▶**.

Transfer of Database User and Password

To read regular prices and OPP promotions from the database, the central promotion pricing service needs a database user. You have to specify this database user and the password during creation of the database service. When you have created the database service, clear the command history to prevent unauthorized disclosure of the password.

For more information about XSA-specific configuration of the promotion pricing service, see the *Common Installation Guide for CARAB* on SAP Help Portal under <https://help.sap.com/viewer/p/CARAB> **|** <Version> **>** *Installation and Upgrade* **>** *Common Installation Guide* **>** *Post-Installation* **>** *SAP Customer Activity Repository* **>** *Configure Omnichannel Promotion Pricing for Use with SAP Customer Activity Repository* **>** *Central Deployment of the Promotion Pricing Service* **>**.

Secure Setup and Configuration

With the configuration of the promotion pricing service, you can determine the maximum number of items in a request. Requests that exceed the maximum number of items are rejected.

SAP recommends to set this parameter to a suitable value.

For more information about the description of parameters, see the *Development and Extension Guide for OPP* on SAP Help Portal under <https://help.sap.com/viewer/p/CARAB> **|** <Version> **>** *Development* **>** *Development and Extension Guide for Omnichannel Promotion Pricing* **>** *sap.client-impl.maxnumberofflineitems* **>**.

If you want to add your own extension to the promotion pricing service, choose suitable access rights for both, the used directory and the jar file that contains your extension. The access should be restricted to the most possible extent (only to trusted users).

For more information about the extensibility of the promotion pricing service, see the *Development and Extension Guide for OPP* on SAP Help Portal under <https://help.sap.com/viewer/p/CARAB> **|** <Version> **>** *Development* **>** *Development and Extension Guide for Omnichannel Promotion Pricing* **>** *OPP Extensibility* **>**.

The promotion pricing service relies on the following functions and frameworks that need a secure setup and configuration:

Table 34:

Function/Framework	Documentation
SAP HANA XSA application server	<i>SAP HANA Administration Guide</i> on SAP Help Portal under https://help.sap.com/viewer/product/SAP_HANA_PLAT-FORM/ <Version> > <i>Administration</i> > <i>SAP HANA Administration Guide</i> > <i>Maintaining the Application Services Run-Time Environment</i> > <i>Maintaining the SAP HANA XS Classic Model Run-Time</i> > <i>SAP HANA XS Administration Tools</i> >

Function/Framework	Documentation
SAP HANA Database	SAP HANA Administration Guide on SAP Help Portal under https://help.sap.com/viewer/product/SAP_HANA_PLAT-FORM/ <Version> > Administration > SAP HANA Administration Guide > Security Administration >

Role Collection in SAP HANA XSA for the Processing of Calculation Requests

To authenticate the calculation requests, OPP uses basic authentication (user, password). Therefore, you must assign a special application role collection to the user to enable processing of the calculation requests.

For more information about XSA-specific configuration of the promotion pricing service, see the *Common Installation Guide for CARAB* on SAP Help Portal under <https://help.sap.com/viewer/p/CARAB/> | [<Version>](#) > [Installation and Upgrade](#) > [Common Installation Guide](#) > [Post-Installation](#) > [SAP Customer Activity Repository](#) > [Configure Omnichannel Promotion Pricing for Use with SAP Customer Activity Repository](#) > [Central Deployment of the Promotion Pricing Service](#) >.

Secure Network Connection (HTTPS)

To provide a secure network connection (using https) for the transfer of calculation requests to the promotion pricing service, you have to do the following:

- Set up SAP HANA XSA for https connections only.
For more information, see the *SAP HANA Administration Guide* on SAP Help Portal under https://help.sap.com/viewer/product/SAP_HANA_PLATFORM/ | [<Version>](#) > [Administration](#) > [SAP HANA Administration Guide](#) > [Maintaining the Application Services Run Time Environment](#) > [Maintaining the SAP HANA XS Classic Model Run Time](#) > [SAP HANA XS Administration Tools](#) >.
- Import the SAP HANA XSA server certificate on client side.
- Set up the client for https instead of http.

5.12 Enterprise Services Security

The following sections in the *SAP NetWeaver Security Guide* and documentation are relevant for all enterprise services delivered with the POS Data Transfer and Audit module of SAP Customer Activity Repository:

- *Web Services Security*
- *Recommended WS Security Scenarios*
- *SAP NetWeaver Process Integration Security Guide*

5.13 Payment Card Security According to PCI-DSS

5.13.1 Introduction

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.

Caution

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/erp> » [Security Information](#) » [Security Guide](#) » [Payment Card Security](#).

For updated general PCI-DSS information, see also SAP Note [1609917](#).

5.13.2 Credit Card Usage Overview

5.13.2.1 Introduction

The SAP Customer Activity Repository 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).

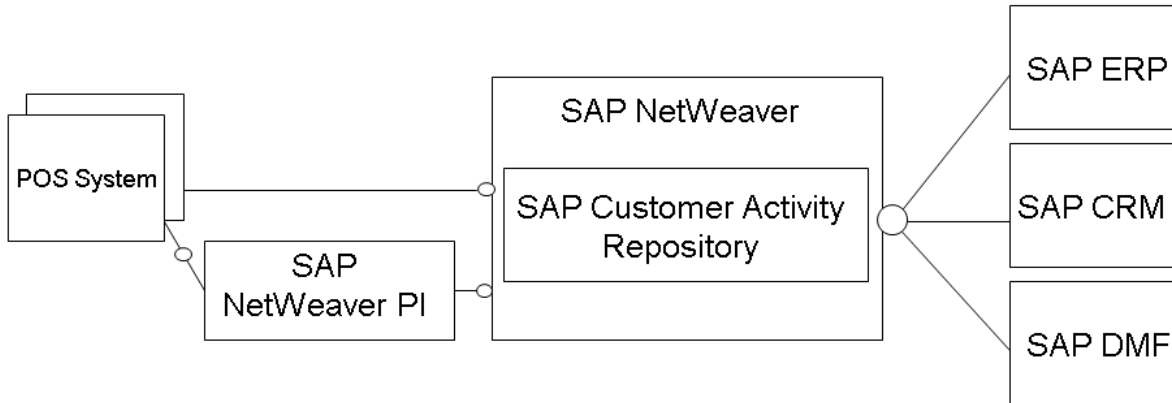


Figure 3: Communication Lines

5.13.2.2 SAP Customer Activity Repository

SAP Customer Activity Repository

SAP Customer Activity Repository 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 Customer Activity Repository 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.

The POS Inbound Processing Engine (included in the POS Data Transfer and Audit module) 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

5.13.2.3 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 SAP Customer Activity Repository; the service code is not transmitted with this data. Depending on the configuration of your transaction transfer application, the credit card data can be unencrypted or encrypted (symmetrically in an asymmetric envelope) 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 SAP Customer Activity Repository 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 Customer Activity Repository inbound interface and forwarded to SAP Customer Activity Repository 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 SAP Customer Activity Repository.

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 Customer Activity Repository 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.

1. The IDoc containing the POS transactional data is sent from SAP Customer Activity Repository to the SAP ERP POS Inbound over HTTPS. During the process, all PCI-DSS relevant data is unencrypted.
2. SAP ERP POS Inbound stores the data with an unencrypted or encrypted PAN using the PAYCRV application.

5.13.3 PCI-Related Customizing

5.13.3.1 SAP Basis Customizing Prerequisites

5.13.3.1.1 Introduction

SAP Customer Activity Repository 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

5.13.3.1.2 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 Customizing 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.

5.13.3.1.3 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 Customizing 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 Customizing 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.

Caution

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 Customizing under [Cross Application Component](#) > [Payment Cards](#) > [Maintain Payment Card Type](#).

Caution

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`

5.13.3.2 SAP Customer Activity Repository Customizing

SAP Customer Activity Repository Customizing

In addition to the configuration settings described in the *SAP Basis Customizing Prerequisites* section, the SAP Customer Activity Repository Customizing activity defines how to store, process, and use sensitive data. For more information, see [SAP Customer Activity Repository](#) > [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:

Table 35:

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 <code>STRUST</code> application, which is part of SAP Basis.	PAYCRV (versioned keys)
Save Mode	<p>Indicates whether the reference of the encrypted payment card number, which is a GUID (Globally Unique Identifier), is always re-used for the same payment card number. Otherwise different GUIDs are assigned for the same payment card number.</p> <p>There is a trade-off between performance and increasing encryption table size during encryption, but there is no performance impact during decryption.</p> <p>As an example, this could provide you with the option to Re-use Existing Entry for a cross-selling analysis of a credit card number or GUID in a further process/system. 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 compliancy.</p>	Reuse Existing Entry
Security Check	The security check must be set to <i>Allow Security Level Check</i> to be compliant with the PCI-DSS standard. This allows SAP Customer Activity Repository to work and check according to the payment card settings in the <code>TCCSEC</code> table in SAP Basis.	Allow Security Level Check

5.13.4 Rotation or Changing of Encryption Keys

5.13.4.1 Introduction

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.

5.13.4.2 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.

5.13.4.3 Pull Mechanism in SAP Customer Activity Repository

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

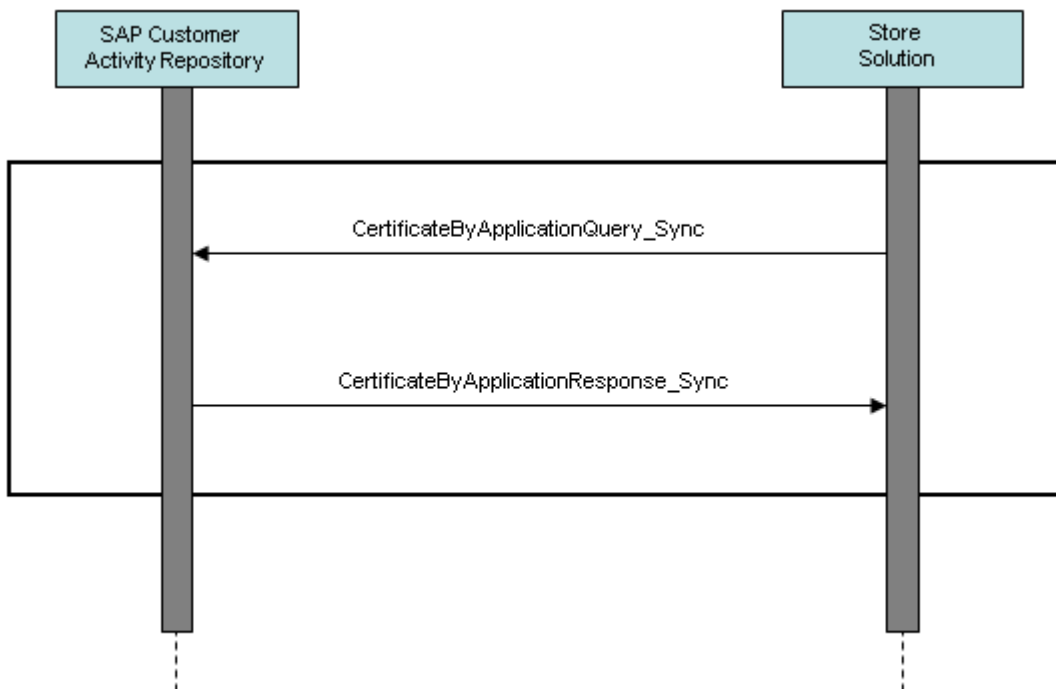


Figure 4: Pull Mechanism

5.13.4.4 Message Choreography SAP Customer Activity Repository 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:

Table 36:

Name	Type	Role	Description
<code>CertificateByApplicationQuery_sync</code>	Message Type	Request	Request for the certificate and the application
<code>CertificateByApplicationResponse_sync</code>	Message Type	Response	Response that contains the certificate and the version
<code>StandardMessageFault</code>	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.

Table 37:

Name	Type	Description
Application	String	SSF Application

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

Table 38:

Name	Type
Certificate	BinaryObject
Version	IntegerValue
Log	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.

```
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 Customer Activity Repository Keys

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

➔ Recommendation

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

5.13.4.5 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 Customer Activity Repository 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.

5.13.5 Masked/Unmasked Display

The payment card security settings, described in the [SAP Customer Activity Repository Customizing \[page 102\]](#) 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 Customer Activity Repository, credit card numbers can only be displayed in the POS Workbench (using the `/POSDW/MONO` 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.

Caution

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 Customizing for SAP Customer Activity Repository, 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.

5.13.6 Logging of Payment Card Number Access

SAP Customer Activity Repository 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.

i Note

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

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

5.13.7.1 Introduction

SAP Customer Activity Repository stores transactional data in the `/POSDW/TLOGF` 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 Customer Activity Repository in which credit card data is stored. All credit card data stored in the LRAW strings must be encrypted.

5.13.7.2 SAP Customer Activity Repository

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.

5.13.7.3 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.

1. The credit card number is decrypted.
2. A message is created to confirm the success or failure of the decryption.

Secure Handling of Credit Card Information During POS Processing

In SAP Customer Activity Repository, 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.

5.13.8 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 Customer Activity Repository. 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 `O2` 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.

5.13.9 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 Customer Activity Repository 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.

5.13.10 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 object to archive TLOG transaction data (which may also contain credit card information):

- /POSDW/TLF

5.13.11 Interfaces for IDoc/Services

In a typical SAP Customer Activity Repository landscape, credit card information is communicated as follows:

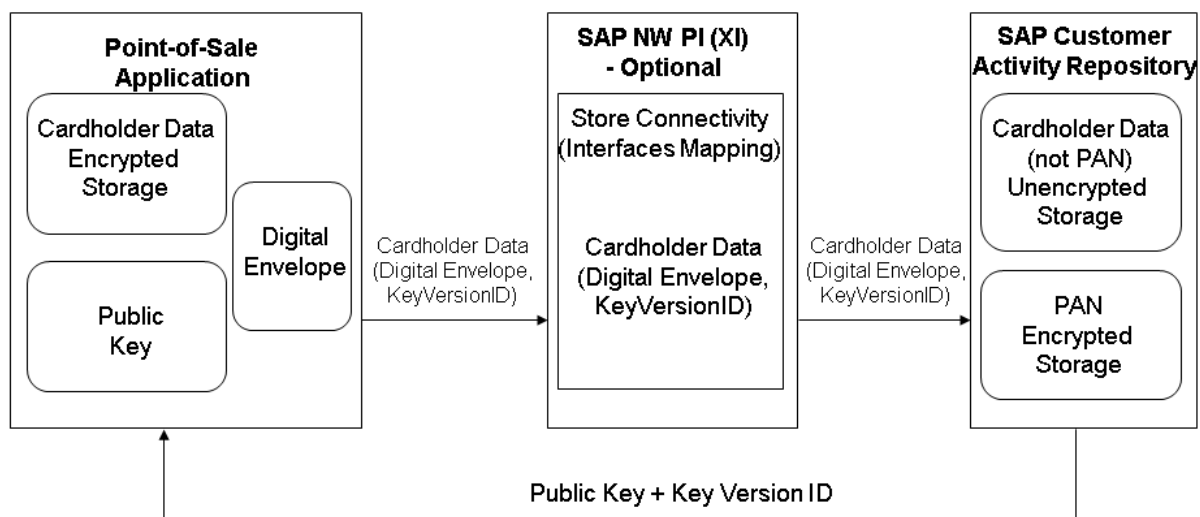


Figure 5: Credit Card Information Communication Flow

See the [Detailed Data Flow of Credit Card Data \[page 99\]](#) 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 Customer Activity Repository.
- Store Connectivity 2.0 or 3.0 can optionally be used to map the encrypted data container to the SAP Customer Activity Repository 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_CREATEBAPI`, 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.

Caution

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 [Handling Sensitive Data in IDocs](#) in the SAP NetWeaver [Security Guide ALE \(ALE Applications\)](#) .

5.13.12 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.

5.13.13 Forward Error Handling

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

5.13.14 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.

i Note

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

5.14 Security-Relevant Logging and Tracing

SAP Customer Activity Repository relies on the logging and tracing mechanisms of SAP NetWeaver.

For more information on tracing and logging, see [Auditing and Logging](#) in the *SAP NetWeaver Security Guide*.

The SAP Customer Activity Repository application (and specifically the POS Data Transfer and Audit module) delivers and uses `/POSDW/PIPE`, an SAP NetWeaver Application Server ABAP application log object for application log entries. This object contains the following subobjects:

- `CHANGE_TASKSTATUS`: Used for task status change related operations
- `CREATETREX`: Used for TREX index-related operations
- `CREDITCARD_MIGRATION`: Used for credit card migration operations
- `DELETE`: Used for operations related to transaction deletion
- `DELETE_AGGREGATE`: Used for operations related to transaction aggregate deletion
- `IDOC_DISPATCHER`: Used for the execution of IDoc Dispatcher processing
- `INBOUND_DISPATCHER`: Used for the executions of Inbound Processing Dispatcher using Queue
- `OUTBOUND_DISPATCHER`: Used for execution of Outbound Processing of Aggregates
- `PIPEDISPATCHER`: Used for execution of PIPE/POS Dispatcher processing
- `REFRESH_INDEX`: Used for operations related to reconstruction of the transaction index
- `REORG_TIBQ`: Used for operations related to the reorganization of the inbound queue for point-of-sales transactions (TIBQ)
- `STOREDAYCHANGE`: Used for operations related to POS Data Key Changes
- `XML_IN`: Used for execution of the Import POS Transaction as XML File
- `XML_OUT`: Used for execution of the Export POS Transaction as XML File
- `DELETE_PLOG`: Used for the deletion of process log entries
- `DELETE_TLOGUS`: Used for the deletion of unprocessed sales
- `MAINTAIN_PARTITIONS`: Used to maintain partitions
- `REFRESH_EXTENSIONS`: Used for the migration of customer enhancement extension segments
- `RESTORE_ARCHIVE`: Used to restore archived TLOG entries
- `TLOG_MIGRATION`: Used for POS Transaction Data Migration
-

Logging and Tracing for Customizing Changes

To evaluate changes the individual SAP Customer Activity Repository Customizing tables, you can activate the logging of changes to table data:

1. Use transaction **SE13** to change the technical settings of the desired table and activate the logging of changes.
2. Use transaction **SCU3** to evaluate the generated logs.

Logging of Payment Card Number Display

SAP Customer Activity Repository 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 Customer Activity Repository logs it in an access log. SAP Customer Activity Repository 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:

Table 39:

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

5.15 Services for Security Lifecycle Management

Use

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

Security Chapter in the EarlyWatch Alert (EWA) Report

This service regularly monitors the Security chapter in the EarlyWatch Alert report of your system. It tells you:

- Whether 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 should be able to help you decide on how to handle the individual cases.
- Whether an accumulation of critical basis authorizations has been identified.
In this case, verify whether the accumulation of critical basis authorizations is okay for your system. If not, correct the situation. If you consider the situation okay, you should still check for any significant changes compared to former EWA reports.
- Whether standard users with default passwords have been identified on your system.

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

Security Optimization Service (SOS)

The Security Optimization Service 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

This service 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.

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. This primarily covers configuration parameters, but it also covers critical security properties like the existence of a non-trivial Gateway configuration or making sure standard users do not have default passwords.

Security in the RunSAP Methodology / Secure Operations Standard

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

More Information

For more information about these services, see:

- EarlyWatch Alert: <https://support.sap.com/support-programs-services/services/earlywatch-alert.html>
- Security Optimization Service / Security Notes Report: <https://support.sap.com/support-programs-services/services/security-optimization-services.html>
- Comprehensive list of Security Notes: <https://support.sap.com/securitynotes>
- Configuration Validation: <https://support.sap.com/solution-manager/processes/change-control-management.html>
- Implement SAP: <https://support.sap.com/support-programs-services/methodologies/implement-sap.html>

6 Business Overview

6.1 Business Scenario

SAP Customer Activity Repository business scenario

You use this scenario to collect transactional data that was previously spread over multiple independent applications into one common foundation. This scenario includes the business process that allows you to receive transactions from the point-of-sale (POS) terminals in your stores, cleanse and audit this data, and store it in SAP Customer Activity Repository.

You use the other business processes included in this scenario to obtain transactional data that can originate from a number of possible sources (for example, SAP CRM) and is stored in SAP ERP in the form of sales documents. Once this data is available in SAP Customer Activity Repository, these business processes allow you to harmonize the transactional data originating from several order channels and to perform a wide spectrum of analytical operations on this data. The analyses you perform can improve decision-making in your retail business. For example:

- Do some articles sell better in a particular channel? Based on this information, should my assortment per order channel be updated?
- What is the profitability of the different order channels in my retail business?
- What products does a particular customer buy in the store or on the web?

i Note

The customer for a given point-of-sale (POS) transaction can only be identified if the customer uses a loyalty card at the time of purchase.

- What is my current inventory (including unprocessed POS transactions)?
- What are the forecasted sales for a given product/location combination?
- Do I have any product on-shelf availability issues in my stores?

6.1.1 Performing POS Data Transfer and Audit

You can use this business process to manage point-of-sale (POS) transactions. During this process, cash register sales data from individual stores is transmitted (typically using trickle feed) to SAP Customer Activity Repository. Administrators monitor and troubleshoot the inbound queues.

After the transactional data is received, you can process, cleanse and audit the data. Auditors ensure the consistency of the sales transaction data.

You can also use outbound tasks of SAP Customer Activity Repository to send the processed transactional data to follow-on applications. Alternatively, you can store transactional data in the repository. Any consuming

applications can access the stored data in near-real-time through SAP HANA views provided in the SAP HANA content for SAP Customer Activity Repository.

Process

1. Define workbench display parameters.
2. Perform short/over balancing.
3. Check data transfer.
4. Control task processing.
5. Analyze error messages.
6. Display follow-on documents.
7. Search for POS transactions.
8. Execute mass change for POS transactions (optional).

Result






Transactional data received from your stores is received, processed and stored in SAP Customer Activity Repository. This data is sent to all required follow-on applications and is made available to any consuming applications through SAP HANA views.

6.1.2 Performing POS Transaction Data Migration

Use

You can use this business process to move POS transaction data from an existing implementation of SAP NetWeaver BI Content (version 7.x6 or earlier) or SAP POS DM 1.0 to SAP Customer Activity Repository 1.0. You only need to perform this process if you want to re-use the POS transaction data already accumulated in your existing implementation to a new SAP Customer Activity Repository implementation.

Process

1. Read the *SAP POS DM and SAP Customer Activity Repository POS Transaction Data Migration Guide*. This guide is available on the SAP Service Marketplace at <http://service.sap.com/instguides>  [Industry Solutions](#)  [Industry Solution Guides](#)  [SAP for Retail](#)  [SAP Customer Activity Repository](#) .
2. Examine your Customizing settings on the target SAP Customer Activity Repository system and disable all tasks set to *Immediate Processing*, as described in the migration guide.
3. Configure and execute the *POS Transaction Data Migration Report*.

Result

POS transactions are migrated from the source system to the new SAP Customer Activity Repository system.

6.1.3 Performing POS Sales Analysis

Use

You can use this business process to analyze POS sales data stored in SAP Customer Activity Repository in near real-time.

POS transactions are transferred to the repository using the *Performing POS Data Transfer and Audit* business process. Trickle feed posting of transactions from connected stores combined with the speed of the underlying SAP HANA database enables you to quickly analyze POS sales data.

Different roles in your retail organization need to analyze POS data at different levels. Some need to analyze data at the transaction line item level, and others need to quickly roll up POS transactional data to various aggregation levels. All these analysis scenarios are supported by this business process.

Prerequisites

Carry out the *Performing POS Data Transfer and Audit* business process.

Process

1. Process POS transaction data for analysis using tasks (if required).
2. Filter data by customer identifier (optional).
To narrow your results, you can apply a filter to the Customer Identifier field.
3. Filter data by order channel (optional).
To narrow your results, you can apply a filter to the Order Channel field to specify one or more channels.
4. Expose POS sales KPIs through SAP HANA VDM.
The POSSalesQuery is a set of characteristics and measures from the transaction log of the POS system combined with master data from SAP ERP. The amount measures are available with currency conversion in the display currency field.

Result

POS transaction data and Key Performance Indicators (KPIs) are made available using SAP HANA views included in SAP HANA content for SAP Customer Activity Repository.

6.1.4 Performing Inventory Visibility Analysis

You can use this business process to get accurate, near-real-time visibility of inventory during store operations, sales and other business processes. Current inventory considers SAP ERP unrestricted stock amounts and POS transactions stored in SAP Customer Activity Repository that are not yet posted to SAP ERP (unprocessed sales.) Combining these figures gives you a more accurate view of the current inventory levels in your retail business.

Implementing this business process to obtain a near-real-time snapshot of your inventory levels gives these benefits:

- Transparency on critical stock levels
- Overview of critical inventory characteristics and KPIs such as valuated stock, unprocessed sales quantities, stock valuations, and safety stock levels
- Answers to critical questions, such as *"Does this store have inventory in stock for a given article?"*
- A high degree of customer satisfaction when combined with sales, service or other store operation business processes.

Prerequisites

Carry out the [Performing POS Data Transfer and Audit](#) business process.

Process

1. Configure splitting of structured articles.
You execute SAP Customizing in SAP ERP to see the impact of splitting structured articles on current stock.
2. Obtain current SAP ERP stock quantities.
The stock quantities are replicated to SAP Customer Activity Repository using SAP Landscape Transformation (SLT).
3. Determine unprocessed sales from the POS transactions worklist.
An unprocessed sale is a POS sales transaction that has not yet been sent to SAP ERP for posting through two-step task processing.
4. Expose near-real-time inventory counts through the SAP HANA Virtual Data Model (VDM).
The stock quantities information in SAP Customer Activity Repository is combined with quantities from unprocessed sales to derive the current stock in stores. The standard inventory visibility content includes three stock types:
 - Unrestricted stock
 - Stock in transit
 - Stock in transferThe following SAP HANA VDMs expose inventory visibility KPIs:
 - InventoryVisibilityQuery
 - InventoryVisibility
 - InventoryVisibilityStockQuantities

Result

Near-real-time inventory data and KPIs are made available using SAP HANA views included in SAP HANA content for SAP Customer Activity Repository.

6.1.5 Performing Sales (Billing) Document Analysis

Use

You can use this business process to analyze the sales data that is generated in a source SAP ERP and made available in near-real-time in SAP Customer Activity Repository.

As sales take place, they are processed by SAP ERP, where corresponding sales documents are created. Certain types of sales documents, such as billing documents, are made available in SAP Customer Activity Repository in near-real-time.

Different roles in your retail organization need to analyze billing document data at different levels of detail. Some need to analyze data at the billing document line item level, and others need to quickly roll up billing document data to various aggregation levels. All these analysis scenarios are supported by this business process.

Process

1. Obtain current sales documents from SAP ERP
Sales (billing) document transactions are replicated from SAP ERP into Customer Activity Repository using the SAP Landscape Transformation (SLT) application.
2. Filter data by customer Identifier (optional).
To narrow your results, you can apply a filter to the Customer Identifier field.
3. Filter data by order channel (optional).
To narrow your results, you can apply a filter to the Order Channel field to specify one or more channels.
4. Expose Sales KPIs through SAP HANA VDM.
The BillingDocumentItemQuery is a set of characteristics and measures from the replicated Sales (Billing) Document combined with master data from SAP ERP.

Result

Billing document data and Key Performance Indicators (KPIs) are made available using SAP HANA views included in SAP HANA content for SAP Customer Activity Repository.

6.1.6 Performing Multichannel Sales Analysis

Use

You can use this business process to analyze multichannel sales data available in SAP Customer Activity Repository.

POS transactions created in your brick-and-mortar stores, also referred to as the store order channel, are transferred to the repository using the [Performing POS Data Transfer and Audit](#) business process.

Sales that take place through other order channels in your business, are processed by SAP ERP, where corresponding sales documents are created. Certain types of sales documents, such as billing documents, are made available in SAP Customer Activity Repository in near real-time.

SAP Customer Activity Repository consolidates sales data from these order channels to give you a holistic view of sales data in near-real-time. Capturing sales data from different order channels in one single platform provides:

- Near-real-time access and visibility into customer sales data across channels. Different roles in your retail organization need to analyze multichannel sales data at different levels. Some need to analyze data at the line item level, and others need to quickly roll up sales data to various aggregation levels. All these analysis scenarios are supported by this business process.
- Near-real-time flash reports within split seconds
- Ability to compare current sales with sales from last year as well as forecasted sales
- Data required by follow-on business scenarios such as new segmentation and call center scenarios, as well as integration with SAP Customer Engagement Intelligence.

Prerequisites

Carry out the [Performing POS Data Transfer and Audit](#) business process.

Process

1. Prepare POS transaction data (SAP Customer Activity Repository).
Ensure that order channels are assigned to POS transactions at the line item level, and are based on the settings of the Assign Order Channels to Sales Item Type Customizing activity.
2. Obtain sales documents from SAP ERP (SAP Customer Activity Repository).
3. Consolidate multichannel data for analysis (SAP Customer Activity Repository).
A virtual data model (VDM) is provided that brings together the POS transactions and sales documents.
4. Filter data by customer identifier (optional) (SAP Customer Activity Repository).
To narrow your results, you can apply a filter to the Customer Identifier field.
5. Filter data by order channel (optional) (SAP Customer Activity Repository).
To narrow your results, you can apply a filter to the Order Channel field to specify one or more channels.
6. Enable forecasting KPIs (SAP Customer Activity Repository).
7. Expose figures using SAP HANA views (SAP HANA).

The following templates are available:

- Multichannel Forecast measures view exposes the forecast from DDF/UDF and has a dependency on the table /POSDW/TLOGF and /DMF/UFC_TS
 - Sales and Forecast comparison by date
 - Multichannel Sales By Location Week Comparison
 - Multichannel Sales By Article Week Comparison
 - Multichannel Sales By Article Location
 - Multichannel Sales In Display Currency
 - MultiChannelSalesQuery, which is a set of characteristics and measures that combines measures from POS and Billing documents with master data from SAP ERP. The amount measures are available with currency conversion in the display currency field.
8. View Multichannel Sales Analytics Dashboards (SAP Fiori)
Multichannel sales analytics dashboards use SAP Fiori technology to provide category managers with real-time insight to sales activities across multiple sales channels.

Result

Multichannel sales data and KPIs are made available using SAP HANA views included in SAP HANA content for SAP Customer Activity Repository.

6.1.7 Enabling Demand Data Foundation and Creating Demand Forecast

You must enable Demand Data Foundation (DDF) to support consuming applications of SAP Customer Activity Repository and to create a demand forecast with Unified Demand Forecast (UDF). For more information about the DDF and UDF modules in SAP Customer Activity Repository, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB> > <your release> > Application Help > SAP Customer Activity Repository > Demand Data Foundation and Unified Demand Forecast.

The UDF demand forecast can serve as the basis for various cross-industry planning and automation use cases. UDF also provides insights into shopper behavior, enabling retailers to perform predictive analytics.

The demand forecast is generated in two steps:

1. Demand modeling is the process of finding the values for the parameters of a defined statistical model to explain the historical demand. The parameters of this demand model typically describe the effects of demand influencing factors (DIFs). The parameter values can then be used to predict the effects of similar DIF occurrences in the future, a process referred to as demand forecasting.
2. Demand forecasting predicts the demand for a particular product or group of products, in a particular location, for a given scenario (for example, promotion, sales channel), for a specific time period in the future. Any aggregation of demand forecasts across products, locations, scenarios, or time is also a demand forecast.

The demand forecast uses the following master data:

- Location

- Location hierarchy
- Product
- Product hierarchy
- Product location combination
- Offer (optional)
- User DIF (optional)

The demand forecast uses the following organizational data:

- Sales organization
- Distribution channel
- Distribution chain
- Order channel

The demand forecast can use the following transaction data (time series):

- Point-of-sale (POS) data from SAP Business Warehouse (SAP BW) or from an external application
- Virtual data model for POS data in SAP Customer Activity Repository
- Virtual data model for sales orders in SAP Customer Activity Repository
- Generic consumption data from an external application

For more information on the different master data objects and time series, see SAP Help Portal at [https://help.sap.com/viewer/p/CARAB/<Version>?Application Help > SAP Customer Activity Repository > Demand Data Foundation > Data Management](https://help.sap.com/viewer/p/CARAB/<Version>?Application%20Help%20SAP%20Customer%20Activity%20Repository%20Demand%20Data%20Foundation%20Data%20Management).

Process

This business process runs as follows:

1. Send master data (SAP ERP)

SAP ERP prepares and sends the master data through a Remote Function Call (RFC) by using transaction **DRFOUT**.

You have the following outbound implementations:

Table 40:

Sequence	Replication Mode	SAP ERP Outbound Implementation	SAP ERP Description	DDF Inbound Interface
1	Initialization	PMCH	Material Group Hierarchy	/DMF/ MDIF_PROD_HIER_INBOUND Product Hierarchy
2	Initialization, Change, and Manual	PMAT	Material	/DMF/ MDIF_PRODUCT_INBOUND Product

Sequence	Replication Mode	SAP ERP Outbound Implementation	SAP ERP Description	DDF Inbound Interface
3	Initialization, Change, and Manual	PPLT	Plant	/DMF/ MDIF_LOCATION_INBOUND Location
4	Initialization, Change, and Manual	PMPL	Material and Plant	/DMF/ MDIF_PROD_LOC_INBOUND Product Location
5	Change	PSPR	Sales Price	/DMF/ MDIF_PROD_LOC_INBOUND Product Location
6	Initialization, Change, and Manual	PCON	Consumption	/DMF/ TS_GENERIC_INBOUND Generic
7	Initialization, Change, and Manual	PCUS	Customer	/DMF/ MDIF_LOCATION_INBOUND Customer
8	Initialization, Change, and Manual	PINV	Inventory	/DMF/ OPIF_INVENTORY_INBOUND Inventory
9	Change	PMAP	Moving Average Price	/DMF/ MDIF_PROD_LOC_INBOUND Product Location
10	Initialization, Change, and Manual	PSOS	Source of Supply	/DMF/ MDIF_LANE_INBOUND Transportation Lane
11	Initialization, Change, and Manual	PVEN	Vendor	/DMF/ MDIF_LOCATION_INBOUND Location

Sequence	Replication Mode	SAP ERP Outbound Implementation	SAP ERP Description	DDF Inbound Interface
12	Initialization, Change, and Manual	POFF	ERP Promotion Transferred as Offer Relevant criteria applies. See SAP Note 1830164	/DMF/ OPIF_OFFER_INBOUND Offer
13	Initialization	PPHY_CLASS	Plant Hierarchy and Group from Classification System	/DMF/ MDIF_LOC_HIER_INBOUND Location Hierarchy
14	Initialization	PAHY	Article Hierarchy	/DMF/ MDIF_PROD_HIER_INBOUND Product Hierarchy
15	Initialization	PPHY	Plant Hierarchy	/DMF/ MDIF_LOC_HIER_INBOUND Location Hierarchy

For more information about the ERP outbound processes, see SAP Help Portal for SAP Customer Activity Repository at <https://help.sap.com/viewer/p/CARAB> > <Version> > Administration > SAP Customer Activity Repository Administration Guide > Configuration Information > Configuring Data Replication from SAP ERP to DDF

For more information about the DDF inbound interfaces, see SAP Help Portal for SAP Customer Activity Repository at <https://help.sap.com/viewer/p/CARAB> > <Version> > Application Help > SAP Customer Activity Repository > Demand Data Foundation > Integration Information

When replicating the data, the system automatically generates data replication logs, which you can then evaluate. You can access this option via *SAP Easy Access SAP Retail* (transaction **w10t**) under > Logistics > Retailing > Distributed Retailing > Merchandise Lifecycle Optimization > Outbound > Analyze Log for Outbound Implementations (DRFLOG)

2. Receive master data (DDF)

DDF can receive master data from the following:

- Multiple SAP ERP applications
- Non-SAP applications

By default, the data is stored in the DDF staging tables. From there, you transfer the data to the production tables by using one of the following options: Integrating Historical Demand Data

- The *Monitor Imports* function

You use this function to transfer data from the staging tables to the production tables, review erroneous records, delete erroneous records, and clean up the staging tables. Note that you correct the erroneous records in the source application, and then you send the data again. For more information about this

function, see <https://help.sap.com/viewer/p/CARAB> > <Version> > Application Help > SAP Customer Activity Repository > Demand Data Foundation > General Services > Monitor Imports > .

- The *Process Inbound Staging Tables* function

For more information, see <https://help.sap.com/viewer/p/CARAB> > <Version> > Application Help > SAP Customer Activity Repository > Demand Data Foundation > General Services > Monitor Imports > Process Inbound Staging Tables > .

- The `/DMF/PROCESS_STAGING_TABLES` report

For more information, see the accompanying system documentation (transaction **SE38**).

i Note

You can choose to bypass the staging tables in Customizing under >> *Cross-Application Components* > *Demand Data Foundation* > *Basic Settings* > *Integration* > *Define Import Settings* > Integrating. For more information, see the Customizing activity documentation (transaction **SPRO**).

DDF inbound process performs validation checks before inserting the data into the production tables. For more information about how the data from external applications is processed, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB> > <Version> > Application Help > SAP Customer Activity Repository > Demand Data Foundation > Integration Information > .

3. Define sales history (DDF)

For more information on how to define the sales history, see the subsection in the *Introduction to SAP Customer Activity Repository* section within the *SAP Customer Activity Repository Administration Guide* .

4. Provide SAP Planning for Retail information (SAP BW)

This step is optional. It is currently used only by SAP Assortment Planning or SAP Merchandise Planning to compare the planned assortment figures to the open-to-buy (OTB).

For more information about the standard SAP BW InfoProvider, see SAP Help Portal at https://help.sap.com/viewer/p/BI_CONTENT > Version > Application Help/SAP Library > BI Content > Industry Solutions > Trading Industries > Retail Trade > Merchandise and Assortment Planning > Retail Planning > MultiProvider > Merchandise Retail Plan > .

5. Receive SAP Planning for Retail information (DDF)

This step is optional. It is currently used only by SAP Assortment Planning to compare the planned assortment figures to the open-to-buy (OTB).

Run report `/DMF/BI_IF_MERCH_PLAN` (transaction **SE38**) to receive the SAP Planning for Retail information from SAP Business Warehouse (SAP BW) to DDF. You can run this report as a scheduled background job (transaction **SM36**).

i Note

- Provide the required settings in the Customizing activities *Define SAP BW Application for Merchandise Planning* and *Define Field Mapping for Merchandise Planning* under >> *Cross-Application Components* > *Assortment Planning* > *Imported Demand Data Foundation Settings* > *Integration* > . Alternatively, provide a custom implementation for the *BAdI: Read Merchandise Planning* Business Add-In.
- If you use the standard settings in the *Define Field Mapping for Merchandise Planning* Customizing activity, that is, you are importing the OTB from the `ORP_MP12` MultiProvider, you must specify **MMF** (*Finalized Merchandise Version*) in the *Merchandise Plan Version* field of the report.

6. Schedule demand model (UDF)








You can schedule the system to create the demand model with the following options:

- Model by hierarchy

With this option, you can select a node to include all products and locations assigned to that hierarchy branch.

- Model by product location

With this option, you can specify a list of one or more products and one or more locations.

For more information, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB>  [Version](#)  [Application Help](#)  [SAP Customer Activity Repository](#)  [Unified Demand Forecast](#)  [General Services](#)  [Schedule Model and Forecast](#) .

7. Schedule demand forecast (UDF)








You can schedule the system to create the demand forecast with the following options:

- Forecast by hierarchy

With this option, you can select a node to include all products and locations assigned to that hierarchy branch.

- Forecast by product location

With this option, you can specify a list of one or more products and one or more locations.

For more information, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB>  [Version](#)  [Application Help](#)  [SAP Customer Activity Repository](#)  [Unified Demand Forecast](#)  [General Services](#)  [Schedule Model and Forecast](#) .

Result

The system generates the demand forecast, which is then saved in the database.

6.1.8 Monitoring On-Shelf Availability

You can use this business process to perform monitoring or analysis:

- Perform monitoring to retrieve a regularly updated list of product locations that are likely out-of-shelf at a specific point in time in one or more stores. You can use this information to trigger follow-on actions, such as replenishment from the backroom, correction of inventory information, and tidying of the shelf to allow for an unobstructed view of the product.
- Perform an analysis to determine which product locations had on-shelf availability issues at what times in the past. This makes you aware of the on-shelf availability situation and allows you to define appropriate follow-up activities to improve the situations where necessary.

By detecting product locations that are likely out-of-shelf using a statistical algorithm based on POS transaction data in SAP Customer Activity Repository, you can determine possible out-of-shelf situations even if you have no separate system inventory for the shelf or the figures are not correct due to spoilage, theft or misplacement.

Process

1. Run the intra-week pattern analyzer.
The intra-week pattern models the regular intra-week and intra-day sales fluctuations of single items or categories. Sales rates are aggregated by product location, store, and store sub-department.
2. Calculate the estimation model parameters.
This calculation models the waiting time between two sales and determines the effect of the trend and sales influencing factors.
3. Perform monitoring or analysis.
 - Perform monitoring to detect and address operational out-of-shelf situations.
 - Perform an analysis to create calculation results for reporting
4. Evaluate the results.
The results of the monitoring are stored in table `/OSA/MONITORING`. Each record in the table represents an expected out-of-shelf situation. This situation is amended by the probability the item is considered to be out-of-shelf, the estimated lost transactions/lost sales/lost revenue (if activated in the monitoring step) and further attributes.
The results of the analysis are stored in table `/OSA/MON_ANA`. This table then contains the transaction intervals that are probably out-of-shelf situations.

Result

For monitoring, the result of this business process is a regularly updated list of product locations that are likely to be out-of-shelf.

For an analysis, the result of this business process is a list of transaction intervals in which the product location was probably out-of-shelf.

More Information

For more information, consult the application help at <http://help.sap.com/cars> >> <your release> > *Application Help* > *SAP Customer Activity Repository* > *On-Shelf Availability* >.

7 Configuration Information

7.1 Configuring Demand Data Foundation (DDF)

Use

You use this procedure to enable Demand Data Foundation (DDF) for creating the forecast with Unified Demand Forecast (UDF) and supporting the consuming applications.

i Note

This information is additional documentation for the DDF Customizing activities, which you can find in the *SAP Customizing Implementation Guide* (transaction **SPRO**) under **► Cross-Application Components ► Demand Data Foundation ►**.

Prerequisites

- You have ensured that the tasks relevant for SAP Customer Activity Repository in the *Common Installation Guide* (for new installations) or the *Common Upgrade Guide* (for upgrade scenarios) have been performed. You can find both guides on SAP Help Portal under <https://help.sap.com/viewer/p/CARAB> **► <Version> ► Installation and Upgrade ►**.
- You have ensured that the SAP ERP system has been customized to send master data to DDF. SAP ERP sends information to DDF by using the data replication framework (DRF, transaction **DRFOUT**).

Procedure

1. If you want to use DDF standard screens, execute transaction **SICF** and ensure that the services under **► Service ► default_host ► sap ► bc ► webdynpro ► dmf ►** are activated.
2. Define the calendar in Customizing under **► SAP NetWeaver ► Basic Settings ► Maintain Calendar ►**.
 - If you are integrating DDF with SAP ERP, ensure that the factory calendars between DDF and SAP ERP are synchronized. If you are not integrating DDF with SAP ERP, you must manually create your factory calendars and ensure that they are assigned to their respective locations for import.
 - If you are integrating DDF with SAP Business Warehouse (SAP BW), ensure that the DDF calendar is synchronized with the SAP BW fiscal year variant.
3. Configure event type linkages.

- Execute transaction **SWETYPV** and select the *Linkage Activated* field for all object types that start with /DMF/CL.

After you have selected the field, the report runs automatically for the following:

- Created product group and location group
 - Imported product hierarchy and location hierarchy
- Execute transaction **SWETYPV** and select the *Enable Event Queue* field for the following object types:

Table 41: Objects Types for Enable Event Queue

Object Category	Object Type	Event	Receiver Type
ABAP Class	/DMF/CL_LOCATION	LOCATION_CREATED	CLASS
ABAP Class	/DMF/CL_LOCATION	LOCATION_UPDATED	CLASS
ABAP Class	/DMF/CL_LOCATION_HIER	CREATE_LOC_HIER	/DMF/ CL_FLATTENER_TRIGGER
ABAP Class	/DMF/CL_PRODUCT_HIER	CREATE_PROD_HIER	/DMF/ CL_FLATTENER_TRIGGER

- Define number ranges for DDF.

Define the number ranges in Customizing for *Number Range Object Maintenance* under **► Cross-Application Components ► General Application Functions ► Records and Case Management ► Basic Settings ► Unique Indicator ► Maintain Number Ranges**.

The following table shows the relevant number ranges for DDF:

Table 42: Number Ranges for DDF

Number Range Object	Description	Number	Range From	Range To
/DMF/OFRID	External offer identifier	01	0000000001	9999999999
/DMF/LHR10	Location hierarchy identifier	01	0000000001	0000020000
		02	0000020001	9999999999
/DMF/PHR10	Product hierarchy identifier	01 (imported hierarchies)	0000000001	0000020000
		02 (manually created hierarchies)	0000020001	9999999999
/DMF/LBJID	Controller job identifier	01	00000001	99999999
/DMF/MD_M2	Background job identifier for the mass maintenance of master data	01	00001	99999

Number Range Object	Description	Number	Range From	Range To
/DMF/MD_MM	Error job identifier for the mass maintenance of master data	01	00001	99999
/DMF/VNDDL	Vendor deal identifier	01	0000000001	9999999999
/DMF/PHPID	Placeholder product identifier	01	00000000000001	99999999999999
/DMF/TSEQ	Time stamp identifier	01	0000000001	9999999999
/DMF/OPJOB	Scheduler job identifier	01	0000000001	9999999999
/DMF/TSKID	Offer financials identifier	01	0000000001	9999999999
/DMF/CLSID	Location cluster identifier	01	0000000001	9999999999

5. See the following table for Customizing activities and Business Add-Ins (BAIs) that reside in the DDF structure and may be relevant for your consuming application.

Table 43: Customizing Activities and BAIs Used by Consuming Applications

Configuration Object	Customizing Activity	SAP Assortment Planning	SAP Merchandise Planning	SAP Promotion Management	SAP Allocation Management
X Mandatory, (X) Optional, Blank Not Used					
/IWBEP/BOR_EVENT	▶ SAP NetWeaver ▶ Gateway Service Enablement ▶ Backend OData Channel ▶ Backend Event Publisher Administration ▶ Event Type Linkages ▶	(X)	(X)	(X)	(X)
OBIL-ALE-11	▶ SAP NetWeaver ▶ Application Server ▶ IDoc Interface/Application Link Enabling (ALE) ▶ Modeling and Implementing Business Processes ▶ Configure Predefined ALE Business Processes ▶ Cross-Application Business Processes ▶ Central User Administration ▶ ALE Mandatory Activities for Central User Administration ▶ Define Logical System ▶	X	X	X	X

Configuration Object	Customizing Activity	SAP Assortment Planning	SAP Merchandise Planning	SAP Promotion Management	SAP Allocation Management
X Mandatory, (X) Optional, Blank Not Used					
OBIL-ALE-12	<ul style="list-style-type: none"> ▶ SAP NetWeaver ▶ Application Server ▶ IDoc Interface/Application Link ▶ Enabling (ALE) ▶ Modeling and Implementing Business Processes ▶ Configure Predefined ALE Business Processes ▶ Cross-Application Business Processes ▶ Central User Administration ▶ ALE Mandatory Activities for Central User Administration ▶ Assign Logical System to Client ▶ 	X	X	X	X
OALE RFCDEST_S M59	<ul style="list-style-type: none"> ▶ SAP NetWeaver ▶ Application Server ▶ IDoc Interface/Application Link ▶ Enabling (ALE) ▶ Modeling and Implementing Business Processes ▶ Configure Predefined ALE Business Processes ▶ Cross-Application Business Processes ▶ Central User Administration ▶ ALE Mandatory Activities for Central User Administration ▶ Create RFC Connections ▶ 	X	X	X	X
_RMPS_REF_SNR O	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ General Application Functions ▶ Records and Case Management ▶ Basic Settings ▶ Unique Indicator ▶ Maintain Number Ranges ▶ 	X	X	X	X
/DMF/LOG_SYS	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Basic Settings ▶ Define Logical Systems ▶ 	X	X	X	X
/DMF/V_C_MD_DFLT	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Basic Settings ▶ Define Default Values ▶ 	X	X		X
/DMF/BUS_WEEK	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Basic Settings ▶ Define Business Week ▶ 	X	X	X	

Configuration Object	Customizing Activity	SAP Assortment Planning	SAP Merchandise Planning	SAP Promotion Management	SAP Allocation Management
X Mandatory, (X) Optional, Blank Not Used					
/DMF/SKIPSTAG	<ul style="list-style-type: none"> ▮ Cross-Application Components ▸ Demand Data Foundation ▸ Basic Settings ▸ Integration ▸ Define Import Settings ▸ 	(X)	(X)	(X)	(X)
/DMF/V_BI_SYSPLN	<ul style="list-style-type: none"> ▮ Cross-Application Components ▸ Demand Data Foundation ▸ Basic Settings ▸ Integration ▸ Define SAP BW Application for Merchandise Planning ▸ 	X	X		
/DMF/V_MAP_BI_PL	<ul style="list-style-type: none"> ▮ Cross-Application Components ▸ Demand Data Foundation ▸ Basic Settings ▸ Integration ▸ Define Field Mapping for Merchandise Planning ▸ 	X	X		
/DMF/SYS_MAP_GEN	<ul style="list-style-type: none"> ▮ Cross-Application Components ▸ Demand Data Foundation ▸ Basic Settings ▸ Integration ▸ Sending System and Master Data System Coupling ▸ 	X	X	X	X
/DMF/BI_TO_MD	<ul style="list-style-type: none"> ▮ Cross-Application Components ▸ Demand Data Foundation ▸ Basic Settings ▸ Integration ▸ BI and Master Data System Coupling ▸ 	(X)	(X)	(X)	(X)
/DMF/PLAN-NED_DATA_DEF	<ul style="list-style-type: none"> ▮ Cross-Application Components ▸ Demand Data Foundation ▸ Basic Settings ▸ Integration ▸ Enhancements Using Business Add-Ins ▸ BAdI: Read Merchandise Planning ▸ 	(X)	(X)		
/DMF/PROP_DESRIP-TIONS_DEF	<ul style="list-style-type: none"> ▮ Cross-Application Components ▸ Demand Data Foundation ▸ Basic Settings ▸ Integration ▸ Enhancements Using Business Add-Ins ▸ BAdI: Description of Replicated Properties ▸ 	(X)	(X)		

Configuration Object	Customizing Activity	SAP Assortment Planning	SAP Merchandise Planning	SAP Promotion Management	SAP Allocation Management
X Mandatory, (X) Optional, Blank Not Used					
/DMF/EM_01	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Basic Settings ▶ Exception Management ▶ Maintain Configuration Data for High Level Exceptions ▶ 	X	X	X	X
/DMF/EM_02	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Basic Settings ▶ Exception Management ▶ Maintain Configuration Data for Low Level Exceptions ▶ 	X	X	X	
/DMF/MSGCUST	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Basic Settings ▶ Exception Management ▶ Define Customer-Specific Replacement Messages ▶ 	(X)	(X)	(X)	(X)
/DMF/MSGSTATUS	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Basic Settings ▶ Exception Management ▶ Define Customizable Message Status ▶ 	(X)	(X)	(X)	(X)
/DMF/EM_CONTEXT_CHART_SWF_FIL	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Basic Settings ▶ Exception Management ▶ BAdI: Exception Monitor Context Chart SWF File Replacement ▶ 	(X)	(X)	(X)	(X)
/DMF/V_WUF_CUST	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Basic Settings ▶ Purging ▶ Define Purge Settings ▶ 	X		X	X

Configuration Object	Customizing Activity	SAP Assortment Planning	SAP Merchandise Planning	SAP Promotion Management	SAP Allocation Management
X Mandatory, (X) Optional, Blank Not Used					
/DMF/ORG_SO_V	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Basic Settings ▶ Organizational Data ▶ Maintain Sales Organization ▶ 	X	X	X	X
/DMF/ORG_CH_V	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Basic Settings ▶ Organizational Data ▶ Maintain Distribution Channel Organization ▶ 	X	X	X	X
/DMF/ORG_DISCH_V	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Basic Settings ▶ Organizational Data ▶ Maintain Distribution Chain ▶ 	X	X	X	X
/DMF/ORG_PO_V	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Basic Settings ▶ Organizational Data ▶ Maintain Purchasing Organization ▶ 	X	X	X	X
/DMF/ORG_PG_V	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Basic Settings ▶ Organizational Data ▶ Maintain Purchasing Group ▶ 	X	X	X	X
/DMF/ORG_DIST_CH_AUTH_CHECK	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Basic Settings ▶ Organizational Data ▶ BAdI: Distribution Chain-Based Authority Check ▶ 	X	X	X	X

Configuration Object	Customizing Activity	SAP Assortment Planning	SAP Merchandise Planning	SAP Promotion Management	SAP Allocation Management
X Mandatory, (X) Optional, Blank Not Used					
/DMF/MD_03	▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Imported Data ▶ Maintain Master Data Field Attributes ▶	(X)	(X)	(X)	(X)
/DMF/MIME_PATH	▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Imported Data ▶ Image ▶ Define Path to MIME Objects ▶	(X)	(X)	(X)	(X)
/DMF/IMAGE_SEARCH	▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Imported Data ▶ Image ▶ Maintain Image Search Parameters ▶	(X)		X	(X)
/DMF/MAINTAIN_IMAGE	▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Imported Data ▶ Image ▶ BAd: Maintain Promotion Specific Verifications for Images ▶			(X)	
/DMF/V_WS_CONF	▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Imported Data ▶ Sales Orders ▶ Maintain Document Types ▶	(X)	X	(X)	
/DMF/V_WS_DCTYP	▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Imported Data ▶ Sales Orders ▶ Maintain Discount Condition Types ▶	(X)	X	(X)	
/DMF/V_WS_RCODE	▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Imported Data ▶ Sales Orders ▶ Maintain Reason Codes for Rejection ▶	(X)	X	(X)	

Configuration Object	Customizing Activity	SAP Assortment Planning	SAP Merchandise Planning	SAP Promotion Management	SAP Allocation Management
X Mandatory, (X) Optional, Blank Not Used					
/DMF/ V_WS_SO_SCH	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Imported Data ▶ Sales Orders ▶ Maintain Schedule Line Category ▶ 	(X)	X	(X)	
/DMF/ V_TS_CONF	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Imported Data ▶ Time Series ▶ Define Times Series For Key Figure Configuration ▶ 				
/DMF/NR_TSID	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Imported Data ▶ Time Series ▶ Maintain Number Range for Time Series ▶ 	X	X	X	(X)
/DMF/BI_IF_02	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Imported Data ▶ Time Series ▶ Initial Transfer Settings ▶ Interface for Initial Data from BI to Time Series Activation ▶ 	(X)	(X)	(X)	(X)
/DMF/BI_IF_01	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Imported Data ▶ Time Series ▶ Initial Transfer Settings ▶ Interface for Initial Data from BI to Time Series Profile ▶ 	(X)	(X)	(X)	(X)
/DMF/ SALES_HIST_PUR CH_PRC	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Imported Data ▶ Time Series ▶ Enhancements Using Business Add-Ins ▶ BAdI: Determination of Purchase Price for Sales History Record Interface for Initial Data from BI to Time Series Profile ▶ 	(X)	(X)		(X)

Configuration Object	Customizing Activity	SAP Assortment Planning	SAP Merchandise Planning	SAP Promotion Management	SAP Allocation Management
X Mandatory, (X) Optional, Blank Not Used					
/DMF/MD_GEN_ATTR	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Maintain General Master Data Attributes ▶ 	(X)			(X)
/DMF/WHATIF_SRC	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Define Time Series Source ▶ 			X	
/DMF/NR_MD_M2	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Mass Maintenance ▶ Maintain Number Ranges for Batch Jobs ▶ 			X	(X)
/DMF/NR_MD_MM	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Mass Maintenance ▶ Maintain Number Ranges for Error Recovery ▶ 			(X)	(X)
/DMF/PLN_CFG	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Planning Configuration ▶ Maintain Number Range for Planning Configuration ▶ 	X	X		
		<p>i Note</p> <p>Version 2.0 FP02 and later</p>	<p>i Note</p> <p>Version 2.0 FP02 and later</p>		

Configuration Object	Customizing Activity	SAP Assortment Planning	SAP Merchandise Planning	SAP Promotion Management	SAP Allocation Management
X Mandatory, (X) Optional, Blank Not Used					
/DMF/PRM_CFG	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Planning Configuration ▶ Maintain Number Range for Parameter Configuration ▶ 	X			
		<div style="background-color: #fff9c4; padding: 5px;"> <p>i Note</p> <p>Version 2.0 FP02 and later</p> </div>			
/DMF/MPR_READ_KPI_DATA	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Planning Configuration ▶ Enhancements Using Business Add-Ins ▶ BAdI: Read Merchandise Planning KPI Data ▶ 	X			
		<div style="background-color: #fff9c4; padding: 5px;"> <p>i Note</p> <p>Version 2.0 FP02 and later</p> </div>			
/DMF/MPR_DSO_INIT	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Planning Configuration ▶ Enhancements Using Business Add-Ins ▶ BAdI: Initialize BW DSO for Product and Market Hierarchy CR ▶ 		X		
			<div style="background-color: #fff9c4; padding: 5px;"> <p>i Note</p> <p>Version 2.0 FP02 and later</p> </div>		
/DMF/VC_ATTRIBUTE	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Attributes ▶ Maintain Attributes ▶ 	X	(X)		X
/DMF/V_ATR_FN_TP	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Attributes ▶ Define Function Types ▶ 	X	(X)		X

Configuration Object	Customizing Activity	SAP Assortment Planning	SAP Merchandise Planning	SAP Promotion Management	SAP Allocation Management
X Mandatory, (X) Optional, Blank Not Used					
/DMF/NR_ATR	▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Attributes ▶ Maintain Number Range for Attributes ▶	X	(X)	a	X
/DMF/NR_ATR_VAL	▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Attributes ▶ Maintain Number Range for Attribute Values ▶	X	(X)	a	X
/DMF/V_INV_HIST	▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Inventory ▶ Define Historical Inventory Information ▶	X	X	a	
/DMF/V_INV_HIST	▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Inventory ▶ BAdI: Definition for Season Determination ▶	X	X	a	
/DMF/NR_LHR	▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Offer ▶ Maintain Number Ranges for Location Hierarchy ▶			X	X
/DMF/V_FIN_CUST	▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Offer ▶ Specify Parameters for Offer Financials ▶			X	
/DMF/OFR_DELETE	▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Offer ▶ Offer Delete Options ▶			X	

Configuration Object	Customizing Activity	SAP Assortment Planning	SAP Merchandise Planning	SAP Promotion Management	SAP Allocation Management
X Mandatory, (X) Optional, Blank Not Used					
/DMF/NR_OF	<ul style="list-style-type: none"> ▮ Cross-Application Components ▸ Demand Data Foundation ▸ Data Maintenance ▸ Offer ▸ Maintain Number Range for Offer ▾ 			X	
/DMF/OFR_PUR_PRC	<ul style="list-style-type: none"> ▮ Cross-Application Components ▸ Demand Data Foundation ▸ Data Maintenance ▸ Offer ▸ Maintain Indicators for Offer Calculations ▾ 			X	
/DMF/PROMO_TACTIC	<ul style="list-style-type: none"> ▮ Cross-Application Components ▸ Demand Data Foundation ▸ Data Maintenance ▸ Offer ▸ Maintain Promotion Specific Tactics ▾ 			X	
/DMF/V_OF	<ul style="list-style-type: none"> ▮ Cross-Application Components ▸ Demand Data Foundation ▸ Data Maintenance ▸ Offer ▸ Define Term Style Groups ▾ 			(X)	
/DMF/OTS_DEF_VCL	<ul style="list-style-type: none"> ▮ Cross-Application Components ▸ Demand Data Foundation ▸ Data Maintenance ▸ Offer ▸ Define Term Style Configuration ▾ 			X	
/DMF/IMPL_OF	<ul style="list-style-type: none"> ▮ Cross-Application Components ▸ Demand Data Foundation ▸ Data Maintenance ▸ Offer ▸ Implementation: Activate Offer Target Group ▾ 			(X)	
/DMF/IMPL_OF	<ul style="list-style-type: none"> ▮ Cross-Application Components ▸ Demand Data Foundation ▸ Data Maintenance ▸ Offer ▸ Implementation: Activate Time Dependent Tactic ▾ 			(X)	

Configuration Object	Customizing Activity	SAP Assortment Planning	SAP Merchandise Planning	SAP Promotion Management	SAP Allocation Management
X Mandatory, (X) Optional, Blank Not Used					
/DMF/IMPL_FIORI_PMR_SW	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Offer ▶ Implementation: Fiori PMR Offers Switch ▶ 			(X)	
/DMF/V_INCENT	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Offer ▶ Maintain Incentives ▶ 			X	
/DMF/INT_01	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Offer ▶ Offer Export to the Execution System ▶ Maintain ERP Promotion Type IDs ▶ 			X	
/DMF/V_OFR_LEAD	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Offer ▶ Offer Export to the Execution System ▶ Maintain Offer Lead Times ▶ 			X	
/DMF/META_ATTR	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Offer ▶ Offer Export to the Execution System ▶ Maintain Metadata Attributes by Class ▶ 			X	
/DMF/OFR_GRP	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Offer ▶ Offer Export to the Execution System ▶ Maintain ERP Outbound Metadata Attributes ▶ 			X	

Configuration Object	Customizing Activity	SAP Assortment Planning	SAP Merchandise Planning	SAP Promotion Management	SAP Allocation Management
X Mandatory, (X) Optional, Blank Not Used					
/DMF/BI_OFFER_PLUGIN	<ul style="list-style-type: none"> ▮ Cross-Application Components > Demand Data Foundation > Data Maintenance > Offer > Offer Export to the Reporting System > Implementation: Activate Track Offer Changes > 			X	
/DMF/V_PHP_BASIC	<ul style="list-style-type: none"> ▮ Cross-Application Components > Demand Data Foundation > Data Maintenance > Placeholder Products > Maintain Basic Settings > 	X		X	
/DMF/NR_PHP	<ul style="list-style-type: none"> ▮ Cross-Application Components > Demand Data Foundation > Data Maintenance > Placeholder Products > Maintain Number Range for Placeholder Products > 	X		X	
/DMF/V_PHP_CRT	<ul style="list-style-type: none"> ▮ Cross-Application Components > Demand Data Foundation > Data Maintenance > Placeholder Products > Define Fields for Placeholder Product Creation > 			X	
/DMF/V_PHP_MNT	<ul style="list-style-type: none"> ▮ Cross-Application Components > Demand Data Foundation > Data Maintenance > Placeholder Products > Define Fields for Placeholder Product Maintenance > 			X	
/DMF/VC_PHP	<ul style="list-style-type: none"> ▮ Cross-Application Components > Demand Data Foundation > Data Maintenance > Placeholder Products > Maintain ERP Transfer Settings > 			(X)	

Configuration Object	Customizing Activity	SAP Assortment Planning	SAP Merchandise Planning	SAP Promotion Management	SAP Allocation Management
X Mandatory, (X) Optional, Blank Not Used					
/DMF/NR_PHR	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Product Hierarchy ▶ Maintain Number Range for Product Hierarchy ▶ 	X		X	X
/DMF/PRHR_CUST	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Product Hierarchy ▶ Control Parameters for Product Hierarchies ▶ 	(X)		(X)	(X)
/DMF/NR_VNDDL	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Vendor Fund ▶ Maintain Number Range for Vendor Deal ▶ 			X	
/DMF/FUND_TYPE	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Vendor Fund ▶ Maintain Fund Type by Sales Organization ▶ 			X	
/DMF/OFFER_IMG	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Vendor Fund ▶ Margin and Price Allocation for Fund Types ▶ 			X	
/DMF/IMPL_VF_EXPORT	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Vendor Fund ▶ Implementation: Activate Vendor Fund Export ▶ 			X	

Configuration Object	Customizing Activity	SAP Assortment Planning	SAP Merchandise Planning	SAP Promotion Management	SAP Allocation Management
X Mandatory, (X) Optional, Blank Not Used					
/DMF/ IMPL_VF_LATE	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Vendor Fund ▶ Implementation: Activating Late Change Function in VF ▶ 			X	
/DMF/ IMPL_VF_PG	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Vendor Fund ▶ Implementation: Product Group Usage in Vendor Funds ▶ 			X	
/DMF/ PROMO_CHARS	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Content Template ▶ Maintain Special Characters ▶ 			X	
/DMF/ OFR_PRIORITY	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Content Template ▶ Maintain Offer Priority ▶ 			X	
DMF/ V_C_MD_HRL	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Location Clustering ▶ Location Clustering Settings ▶ 	X	(X)		X
/DMF/CLSTS_NR	<ul style="list-style-type: none"> ▶▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Location Clustering ▶ Maintain Number Range for Location Cluster Sets ▶ 	X	(X)		X

Configuration Object	Customizing Activity	SAP Assortment Planning	SAP Merchandise Planning	SAP Promotion Management	SAP Allocation Management
X Mandatory, (X) Optional, Blank Not Used					
/DMF/NR_MDID	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Assortment Modules ▶ Maintain Number Range for Assortment Modules ▶ 	X			
DMF/V_DCC_CAPPL *All consuming applications of SAP Customer Activity Repository are delivered	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Distribution Curve Configuration ▶ Define Consuming Applications for Distribution Curves ▶ 	(X)	(X)	(X)	X
/DMF/V_DCC_UTP	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Distribution Curve Configuration ▶ Define Usage Types for Distribution Curves ▶ 	(X)	(X)	(X)	X
/DMF/V_DCC_UTPCA	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Distribution Curve Configuration ▶ Assign Consuming Applications to Usage Types ▶ 	(X)	(X)	(X)	X
/DMF/V_DRAFT_ADM	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Distribution Curve Configuration ▶ Maintain Expiry and Reorganization Periods for Drafts ▶ 	(X)	(X)	(X)	X
/DMF/BADI_TLOG_DATA_ACCESS	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Analytics ▶ BAdI: TLOG Data Access ▶ 			(X)	

Configuration Object	Customizing Activity	SAP Assortment Planning	SAP Merchandise Planning	SAP Promotion Management	SAP Allocation Management
X Mandatory, (X) Optional, Blank Not Used					
/DMF/V_BP_DPP	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Data Protection and Privacy ▶ Enable Business Partner ID Blocking ▶ 	(X)	(X)	(X)	(X)
/DMF/BP_OB_NUM	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Data Protection and Privacy ▶ Maintain Number Range for Blocked ID ▶ 	(X)	(X)	(X)	(X)
	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Data Maintenance ▶ Data Protection and Privacy ▶ Enhancements Using Business Add-Ins ▶ BAdI: Block Business Partner ID ▶ 	(X)	(X)	(X)	(X)

6. The Customizing activities for modeling and forecasting are shipped with default settings. The activities are listed in the following table.

Table 44: Customizing Activities for Modeling and Forecasting

Configuration Object	Customizing Activity
/DMF/V_DIAG_ID	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Modeling and Forecasting ▶ Define Diagnostic IDs ▶
DMF/V_UMD_CAT	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Modeling and Forecasting ▶ Define Model Categories ▶
/DMF/V_UMRP_MOD	<ul style="list-style-type: none"> ▶ Cross-Application Components ▶ Demand Data Foundation ▶ Modeling and Forecasting ▶ Assign Material Requirements Planning Types to Model Categories ▶

Configuration Object	Customizing Activity
/DMF/V_MOD_MAP	► Cross-Application Components ► Demand Data Foundation ► Modeling and Forecasting ► Assign Demand Model Definitions ►
/DMF/V_UMD_CONFIG	► Cross-Application Components ► Demand Data Foundation ► Modeling and Forecasting ► Define Modeling Control Settings ►
/DMF/V_UFC_CONFIG	► Cross-Application Components ► Demand Data Foundation ► Modeling and Forecasting ► Define Forecasting Control Settings ►
/DMF/V_HPR_CTRL	► Cross-Application Components ► Demand Data Foundation ► Modeling and Forecasting ► Configure Hierarchical Priors ►
/DMF/V_FCQUALIDX	► Cross-Application Components ► Demand Data Foundation ► Modeling and Forecasting ► Define Categories for Forecast Confidence Index ►

7. The consuming applications may be affected by settings available in the ► [SAP NetWeaver Business Client](#) ► [Services](#) ► menu. For more information, see the *General Services* section for DDF under <https://help.sap.com/viewer/p/CARAB> ► [<Version>](#) ► [Application Help](#) ► [SAP Customer Activity Repository](#) ► [Demand Data Foundation](#) ►.

In particular, the [Configure Load Balancing](#) service affects the performance of certain consuming applications (such as SAP Promotion Management) or modules (such as UDF modeling and forecasting).

7.2 Configuring Data Replication from SAP ERP to DDF

Use

You use this procedure to support the enabling of Demand Data Foundation (DDF) for consuming applications such as demand forecasts as described in the .

Prerequisites

- You have successfully installed and implemented SAP Customer Activity Repository as described in the *Common Installation Guide* (for new installations) or the *Common Upgrade Guide* (for upgrade scenarios). You can find both guides on SAP Help Portal under <https://help.sap.com/viewer/p/CARAB> ► [<Version>](#) ► [Installation and Upgrade](#) ►.

- You have ensured that the following actions have been performed in the SAP ERP application:
 - If you are using SAP ECC, the following business functions have been activated:
 - ISR_APPL_OUTBOUND_DMF
 - ISR_RETAIL_OUTBOUND_DMF
 - The user has been authorized to execute transaction **DRFOUT** (DRF_ADM authorization object).
 - The logical system has been defined in the Customizing activity *Define Logical System*.
 - The remote function call (RFC) connection has been created (transaction **SM59**).
 - The business system has been defined in the Customizing activity *Define Technical Settings for Business System*.
 - You have ensured that the following actions have been performed in the Demand Data Foundation system:
 - The remote function call (RFC) connection has been created (transaction **SM59**).
 - The logical system has been defined in the Customizing activity *Define Logical System*.

Procedure

ERP Activity

1. Transport ISO codes to DDF. For more information about ISO codes, see SAP ERP Customizing under [SAP NetWeaver > Basic Settings > Check Units of Measurement > ISO Codes](#) (T006I table).
2. Transport units of measurement to DDF. For more information about units of measurement, see SAP ERP Customizing under [SAP NetWeaver > Basic Settings > Check Units of Measurement > Units of Measurement](#) (T006 table).
3. Define the calendar in Customizing under [SAP NetWeaver > Basic Settings > Maintain Calendar](#). Ensure that the factory calendars between DDF and SAP ERP are aligned.
4. Activate the *DRF BC Set for SAP Content* (CA_MDP_DRF_01) business configuration set (transaction **SCPR20**).
5. Select which business objects you want to transfer in Customizing under [Logistics - General > Outbound > Maintain Control Parameters](#).

i Note

Verify that you have made the necessary settings to ensure that you only transfer the business objects that you need in your target system.

6. Define the custom settings for data replication (transaction **DRFIMG**).
 - Define Technical Settings for Business Systems
Assign a business system, a logical system, and an RFC destination to initialize the data transfer. You can initialize only one defined business system. Ensure that you have **not selected** the *Disabled for Replication* field for the target business system.
Note that you can send data manually for the other business systems.
 - Define Replication Models

- Create an entry with the following information:

Table 45:

Replication Model	DDF
Description	Demand Data Foundation
Log Days	7
Active	Selected

- Assign outbound implementations.
Create an entry for each outbound implementation that you want to use as follows:


Table 46:

Outbound Implementation * = mandatory	SAP ERP Description	Sequence	Communication Channel
PMCH *	Material Group Hierarchy	1	Replication via RFC
PMAT *	Material	2	Replication via RFC
PPLT *	Plant	3	Replication via RFC
PCUS	Customer	4	Replication via RFC
PMPL *	Material and Plant	5	Replication via RFC
PSPR *	Sales Price	6	Replication via RFC
PCON	Consumption	7	Replication via RFC
PINV	Inventory	8	Replication via RFC
PMAP *	Moving Average Price	9	Replication via RFC
PSOS *	Source of Supply	10	Replication via RFC
PVEN	Vendor	11	Replication via RFC
POFF	ERP Promotion Transferred as Offer 2538371 information for bonus buy.	12	Replication via RFC

Outbound Implementation * = mandatory	SAP ERP Description	Sequence	Communication Channel
PPHY_CLASS	Plant Hierarchy and Group from Classification System	13	Replication via RFC
PAHY *	Article Hierarchy	14	Replication via RFC
PPHY *	Plant Hierarchy	15	Replication via RFC

- #
- Assign a target system for the replication model (outbound implementation). Each outbound implementation that you want to use must have an assigned business system.
- Assign the language. Note that if you leave this field empty, all languages are replicated.
- Activate your replication model.


7. Define filters for initialization (transaction **DRFF**).

 **Caution**

Ensure that you have values assigned to the available filters. Otherwise, SAP ERP does not send data during the initialization mode.

Procedure - Demand Data Foundation System

1. Ensure that the prerequisites for each DDF inbound interface have been performed. For more information, see <https://help.sap.com/viewer/p/CARAB> >> <Version> > *Application Help* > *SAP Customer Activity Repository* > *Demand Data Foundation* > *Integration Information* > *Inbound Processing* > *Inbound Interfaces for Remote Function Call (RFC) Communication*.

 **Note**

The DDF organizational data has to match with the SAP ERP organizational data.

In SAP ERP, you can use the following tables to query the available organizational data:

- Distribution channel TVTW (VTWEG field)
- Sales organization TVKO (VKORG field)
- Purchasing group T024 (EKGRP field)
- Purchasing organization T024E (EKORG field)

In DDF, you define the organizational data in the following Customizing activities:

- [Maintain Sales Organization](#)
- [Maintain Distribution Channel](#)

- [Maintain Distribution Chain](#)
- [Maintain Purchasing Organization](#)
- [Maintain Purchasing Group](#)

More Information

- For information about configuring consuming applications of DDF, see <https://help.sap.com/viewer/p/CARAB> [>](#) [<Version>](#) [>](#) [Administration](#) [>](#)
- For information about replicating SAP ERP promotions to DDF, see SAP Note [1830164](#) [>](#).
- For information about replicating SAP ERP locations to DDF, see SAP Note [1825740](#) [>](#).

7.3 Configuring DDF Integration Scenarios

The Demand Data Foundation (DDF) has a standard integration for SAP ERP scenarios including single or multiple SAP ECC (SAP ERP Central Component) and SAP S/4HANA systems. In addition, third-party external system integration is possible in certain scenarios.

Prerequisites

- The *Post-Installation* section has been completed for your scenario in the *Common Installation Guide*.
- You have completed activities in the section *Configuring Data Replication from SAP ERP to DDF* of this guide.

Context

The standard integration to SAP ERP systems provides master and historical transaction data to the Demand Data Foundation in the SAP Customer Activity Repository. Through the use of an outbound data replication framework (DRF) using transaction code `DRFOUT` you control and initiate the sending of master data and transactional data to the application server. The receiving system (the application server) uses an inbound processing function to monitor, troubleshoot and populate the required tables. To integrate with a third party ERP scenario see <http://help.sap.com/viewer/p/CARAB> [>](#) [<your release>](#) [>](#) [Application Help](#) [>](#) [SAP Customer Activity Repository](#) [>](#) [Demand Data Foundation](#) [>](#) [Integration Information](#) [>](#). This replication process is required for the following scenarios:

- Modeling and forecasting with UDF
- SAP Allocation Management
- SAP Assortment Planning
- SAP Merchandise Planning

- SAP Promotion Management

Review the following steps for your scenario.

Procedure

ERP Server

1. Use SAP logon to access SAP Easy Access menu on your ERP server. Use transaction code `DRFOUT`. Use the program documentation and system help available on the Execute Data Replication screen to determine the values to enter.
2. Be sure to select the appropriate *Outbound Implementation* types required for your scenario. Consult the *Post-Installation* section *Configure Data Replication* for your scenario in the *Common Install Guide*.
3. Use the *Execute* icon to process your selection.

Application Server

4. From the SAP Easy Access menu on your application server, use transaction code `NWBC` to access menu **►► Services ► Monitor Imports ▾**.
5. Use the *Manual Processing* button to select and process the message types corresponding to your outbound implementation types.

Related Information

[Configuring Data Replication from SAP ERP to DDF \[page 150\]](#)

[Configuring Demand Data Foundation \(DDF\) \[page 131\]](#)

7.4 Enabling Demand Data Foundation and Creating Demand Forecast

You must enable Demand Data Foundation (DDF) to support consuming applications of SAP Customer Activity Repository and to create a demand forecast with Unified Demand Forecast (UDF). For more information about the DDF and UDF modules in SAP Customer Activity Repository, see SAP Help Portal at [The UDF demand forecast can serve as the basis for various cross-industry planning and automation use cases. UDF also provides insights into shopper behavior, enabling retailers to perform predictive analytics.](https://help.sap.com/viewer/p/CARAB-<your release> > Application Help > SAP Customer Activity Repository > Demand Data Foundation ▾ and Unified Demand Forecast.</p></div><div data-bbox=)

The demand forecast is generated in two steps:

1. Demand modeling is the process of finding the values for the parameters of a defined statistical model to explain the historical demand. The parameters of this demand model typically describe the effects of demand influencing factors (DIFs). The parameter values can then be used to predict the effects of similar DIF occurrences in the future, a process referred to as demand forecasting.

-
2. Demand forecasting predicts the demand for a particular product or group of products, in a particular location, for a given scenario (for example, promotion, sales channel), for a specific time period in the future. Any aggregation of demand forecasts across products, locations, scenarios, or time is also a demand forecast.

The demand forecast uses the following master data:

- Location
- Location hierarchy
- Product
- Product hierarchy
- Product location combination
- Offer (optional)
- User DIF (optional)

The demand forecast uses the following organizational data:

- Sales organization
- Distribution channel
- Distribution chain
- Order channel

The demand forecast can use the following transaction data (time series):

- Point-of-sale (POS) data from SAP Business Warehouse (SAP BW) or from an external application
- Virtual data model for POS data in SAP Customer Activity Repository
- Virtual data model for sales orders in SAP Customer Activity Repository
- Generic consumption data from an external application

For more information on the different master data objects and time series, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB/<Version> > Application Help > SAP Customer Activity Repository > Demand Data Foundation > Data Management>.

Process

This business process runs as follows:

1. Send master data (SAP ERP)
SAP ERP prepares and sends the master data through a Remote Function Call (RFC) by using transaction **DRFOUT**.

You have the following outbound implementations:

Table 47:

Sequence	Replication Mode	SAP ERP Outbound Implementation	SAP ERP Description	DDF Inbound Interface
1	Initialization	PMCH	Material Group Hierarchy	/DMF/ MDIF_PROD_HIER_INBOUND Product Hierarchy
2	Initialization, Change, and Manual	PMAT	Material	/DMF/ MDIF_PRODUCT_INBOUND Product
3	Initialization, Change, and Manual	PPLT	Plant	/DMF/ MDIF_LOCATION_INBOUND Location
4	Initialization, Change, and Manual	PMPL	Material and Plant	/DMF/ MDIF_PROD_LOC_INBOUND Product Location
5	Change	PSPR	Sales Price	/DMF/ MDIF_PROD_LOC_INBOUND Product Location
6	Initialization, Change, and Manual	PCON	Consumption	/DMF/ TS_GENERIC_INBOUND Generic
7	Initialization, Change, and Manual	PCUS	Customer	/DMF/ MDIF_LOCATION_INBOUND Customer
8	Initialization, Change, and Manual	PINV	Inventory	/DMF/ OPIF_INVENTORY_INBOUND Inventory

Sequence	Replication Mode	SAP ERP Outbound Implementation	SAP ERP Description	DDF Inbound Interface
9	Change	PMAP	Moving Average Price	/DMF/ MDIF_PROD_LOC_INBOUND Product Location
10	Initialization, Change, and Manual	PSOS	Source of Supply	/DMF/ MDIF_LANE_INBOUND Transportation Lane
11	Initialization, Change, and Manual	PVEN	Vendor	/DMF/ MDIF_LOCATION_INBOUND Location
12	Initialization, Change, and Manual	POFF	ERP Promotion Transferred as Offer Relevant criteria applies. See SAP Note 1830164	/DMF/ OPIF_OFFER_INBOUND Offer
13	Initialization	PPHY_CLASS	Plant Hierarchy and Group from Classification System	/DMF/ MDIF_LOC_HIER_INBOUND Location Hierarchy
14	Initialization	PAHY	Article Hierarchy	/DMF/ MDIF_PROD_HIER_INBOUND Product Hierarchy
15	Initialization	PPHY	Plant Hierarchy	/DMF/ MDIF_LOC_HIER_INBOUND Location Hierarchy

For more information about the ERP outbound processes, see SAP Help Portal for SAP Customer Activity Repository at <https://help.sap.com/viewer/p/CARAB> > <Version> > Administration > SAP Customer Activity Repository Administration Guide > Configuration Information > Configuring Data Replication from SAP ERP to DDF

For more information about the DDF inbound interfaces, see SAP Help Portal for SAP Customer Activity Repository at <https://help.sap.com/viewer/p/CARAB> > <Version> > Application Help > SAP Customer Activity Repository > Demand Data Foundation > Integration Information

When replicating the data, the system automatically generates data replication logs, which you can then evaluate. You can access this option via *SAP Easy Access SAP Retail* (transaction **W10T**) under [Logistics](#) [Retailing](#) [Distributed Retailing](#) [Merchandise Lifecycle Optimization](#) [Outbound](#) [Analyze Log for Outbound Implementations \(DRFLOG\)](#).

2. Receive master data (DDF)

DDF can receive master data from the following:

- Multiple SAP ERP applications
- Non-SAP applications

By default, the data is stored in the DDF staging tables. From there, you transfer the data to the production tables by using one of the following options: Integrating Historical Demand Data

- The *Monitor Imports* function
You use this function to transfer data from the staging tables to the production tables, review erroneous records, delete erroneous records, and clean up the staging tables. Note that you correct the erroneous records in the source application, and then you send the data again. For more information about this function, see <https://help.sap.com/viewer/p/CARAB> [<Version>](#) [Application Help](#) [SAP Customer Activity Repository](#) [Demand Data Foundation](#) [General Services](#) [Monitor Imports](#).
- The *Process Inbound Staging Tables* function
For more information, see <https://help.sap.com/viewer/p/CARAB> [<Version>](#) [Application Help](#) [SAP Customer Activity Repository](#) [Demand Data Foundation](#) [General Services](#) [Monitor Imports](#) [Process Inbound Staging Tables](#).
- The `/DMF/PROCESS_STAGING_TABLES` report
For more information, see the accompanying system documentation (transaction **SE38**).

i Note

You can choose to bypass the staging tables in Customizing under [Cross-Application Components](#) [Demand Data Foundation](#) [Basic Settings](#) [Integration](#) [Define Import Settings](#) Integrating. For more information, see the Customizing activity documentation (transaction **SPRO**).

DDF inbound process performs validation checks before inserting the data into the production tables. For more information about how the data from external applications is processed, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB> [<Version>](#) [Application Help](#) [SAP Customer Activity Repository](#) [Demand Data Foundation](#) [Integration Information](#).

3. Define sales history (DDF)

For more information on how to define the sales history, see the subsection in the *Introduction to SAP Customer Activity Repository* section within the *SAP Customer Activity Repository Administration Guide*.

4. Provide SAP Planning for Retail information (SAP BW)

This step is optional. It is currently used only by SAP Assortment Planning or SAP Merchandise Planning to compare the planned assortment figures to the open-to-buy (OTB).

For more information about the standard SAP BW InfoProvider, see SAP Help Portal at https://help.sap.com/viewer/p/BI_CONTENT [Version](#) [Application Help/SAP Library](#) [BI Content](#) [Industry Solutions](#) [Trading Industries](#) [Retail Trade](#) [Merchandise and Assortment Planning](#) [Retail Planning](#) [MultiProvider](#) [Merchandise Retail Plan](#).

5. Receive SAP Planning for Retail information (DDF)

This step is optional. It is currently used only by SAP Assortment Planning to compare the planned assortment figures to the open-to-buy (OTB).

Run report `/DMF/BI_IF_MERCH_PLAN` (transaction **SE38**) to receive the SAP Planning for Retail information from SAP Business Warehouse (SAP BW) to DDF. You can run this report as a scheduled background job (transaction **SM36**).

i Note

- Provide the required settings in the Customizing activities *Define SAP BW Application for Merchandise Planning* and *Define Field Mapping for Merchandise Planning* under **► Cross-Application Components ► Assortment Planning ► Imported Demand Data Foundation Settings ► Integration ►**. Alternatively, provide a custom implementation for the *BAdI: Read Merchandise Planning* Business Add-In.
- If you use the standard settings in the *Define Field Mapping for Merchandise Planning* Customizing activity, that is, you are importing the OTB from the `ORP_MP12` MultiProvider, you must specify **MMF** (*Finalized Merchandise Version*) in the *Merchandise Plan Version* field of the report.

6. Schedule demand model (UDF)

You can schedule the system to create the demand model with the following options:

- Model by hierarchy
With this option, you can select a node to include all products and locations assigned to that hierarchy branch.
- Model by product location
With this option, you can specify a list of one or more products and one or more locations.

For more information, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB> **► Version ► Application Help ► SAP Customer Activity Repository ► Unified Demand Forecast ► General Services ► Schedule Model and Forecast ►**.

7. Schedule demand forecast (UDF)

You can schedule the system to create the demand forecast with the following options:

- Forecast by hierarchy
With this option, you can select a node to include all products and locations assigned to that hierarchy branch.
- Forecast by product location
With this option, you can specify a list of one or more products and one or more locations.

For more information, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB> **► Version ► Application Help ► SAP Customer Activity Repository ► Unified Demand Forecast ► General Services ► Schedule Model and Forecast ►**.

Result

The system generates the demand forecast, which is then saved in the database.

7.5 Calculating Distribution Curves in DDF

The *Calculate Distribution Curves* service in Demand Data Foundation (DDF) is available for different scenarios. The service has different implementations depending on the scenario. No specific configuration is required on the DDF side.

Use

The *Calculate Distribution Curves* service analyzes historical daily sales data that spans over all sizes and colors of a particular product, and while considering season information. You can use the calculated distribution curves to support the manual or automatic allocation of products to locations (in particular, lifecycle products such as fashion).

Supported Scenarios

You can use the *Calculate Distribution Curves* service with the following scenarios:

- [Calculating Distribution Curves for SAP Allocation Management \[page 161\]](#)
- [Calculating Distribution Curves for External System \[page 165\]](#)

7.5.1 Calculating Distribution Curves for SAP Allocation Management

SAP Allocation Management uses the distribution curve analysis that DDF provides in SAP Customer Activity Repository to do a size breakdown within the allocation process. You can configure this analysis using different Customizing activities and the *Configure Distribution Curves* SAP Fiori app. No specific configuration is required on the DDF side.

Context

Distribution curves represent the proportional contribution of different sizes (and/or colors) to the sales of a product or product group. For example, fashion companies use distribution curves for the purpose of breaking down planned quantities from product/color level to size level in different use cases (such as planning, buying, and allocations).

SAP Allocation Management uses distribution curves in the sense of size curves for the automatic breakdown of quantities from product on color level to size level. Typically, the historical size distribution is analyzed to anticipate the future size distribution for a specific product/color. By calculating distribution curves based on the aggregated sales of **similar** products and locations, you can use this approach also for **new** products, which have no historical sales in a particular location or in any location.

Prerequisites

- **Time series**
Your historical sales data must be available as point-of-sale data (time series source POS_TS).
- **Hierarchies**
You cannot use time-dependent master data hierarchies.
- **Corrections**
You have implemented all required SAP Notes for this release. For more information, see the *Check RINs* section of the *Common Installation Guide* (for new installations) or the *Common Upgrade Guide* (for upgrade scenarios).

Implementation

In SAP Allocation Management

For information on how distribution curves are configured and used in SAP Allocation Management, see SAP Help Portal under <https://help.sap.com/viewer/p/CARAB> > <Version> > *Application Help* >:

- Setup: > *SAP Allocation Management* > *Setting up Supporting Processes* > *Distribution Curve Analysis* > (including all subsections)
- Configuration via SAP Fiori app: > *SAP Fiori for SAP Allocation Management* > *Configure Distribution Curves* >
- Usage: > *SAP Allocation Management* > *Allocation Plan* > *Allocation Plan Details* > (distribution curve result as key figure in the allocation plan)

In Demand Data Foundation (DDF)

The implementation in the back-end is as follows:

Table 48: Calculation of Distribution Curves in DDF for SAP Allocation Management

Calculation request	SAP Allocation Management calls an ABAP Managed Database Procedure (AMDP) in SAP Customer Activity Repository (/DMF/CL_DISTRIBUTION_CURVE=>COMPUTE () in package /DMF/DIST_CURVE).
---------------------	--

<p>Configuration</p>	<p>Customizing</p> <p>The following Customizing activities are available under Cross-Application Components > Demand Data Foundation > Data Maintenance > Distribution Curve Configuration :</p> <ul style="list-style-type: none"> • Define Consuming Applications for Distribution Curves • Define Usage Types for Distribution Curves • Assign Consuming Applications to Usage Types • Maintain Expiry and Reorganization Periods for Drafts <p>For more information, see the documentation of each activity (transaction SPRO).</p> <p>SAP Fiori App</p> <p>You use the Configure Distribution Curves app to define input parameters for the calculation. For example, you can specify whether you want to use additional product attributes for the product aggregation. You can define the analysis period for season dependent and season independent products. And you can select the valid product hierarchy nodes and location hierarchies to be considered for the analysis.</p> <p>DDF stores your Customizing and app settings in the tables in package <code>/DMF/DIST_CURVE</code>.</p>
<p>Calculation scope</p>	<p>DDF receives the following input values from the consuming application via the AMDP:</p> <ul style="list-style-type: none"> • Target generic products in the specified locations for which the distribution curves should be calculated (<code>prod_loc_list</code>) <div style="background-color: #fff9c4; padding: 10px; border: 1px solid #ccc;"> <p>i Note</p> <p>The product hierarchy is taken from Customizing under Cross-Application Components > Demand Data Foundation > Basic Settings > Define Default Values .</p> </div> <ul style="list-style-type: none"> • Target planning seasons of the target products (<code>prod_season_list</code>) Season parameters: Each target product is given a season ID and a season year (both optional) as input parameters. <ul style="list-style-type: none"> ◦ If the parameters are supplied, the target product is treated as "season dependent product". ◦ If the parameters are empty, the target product is treated as "season independent product". • Target planning date (<code>planning_date</code>) • Specific distribution curve configuration (DCC) based on the consuming application (<code>consuming_application</code>) • Flag that allows to discard (default setting) or keep the temporary tables (<code>keep_temp_tables</code>) <p>Based on the input and the data in the <code>/DMF/DIST_CURVE</code> tables, DDF determines the relevant historical data for the sales analysis:</p> <ul style="list-style-type: none"> • Sales analysis period • Source product locations whose historical sales to aggregate for the analysis

Aggregation concept

- The historical sales of the source product locations are aggregated along the defined characteristics.

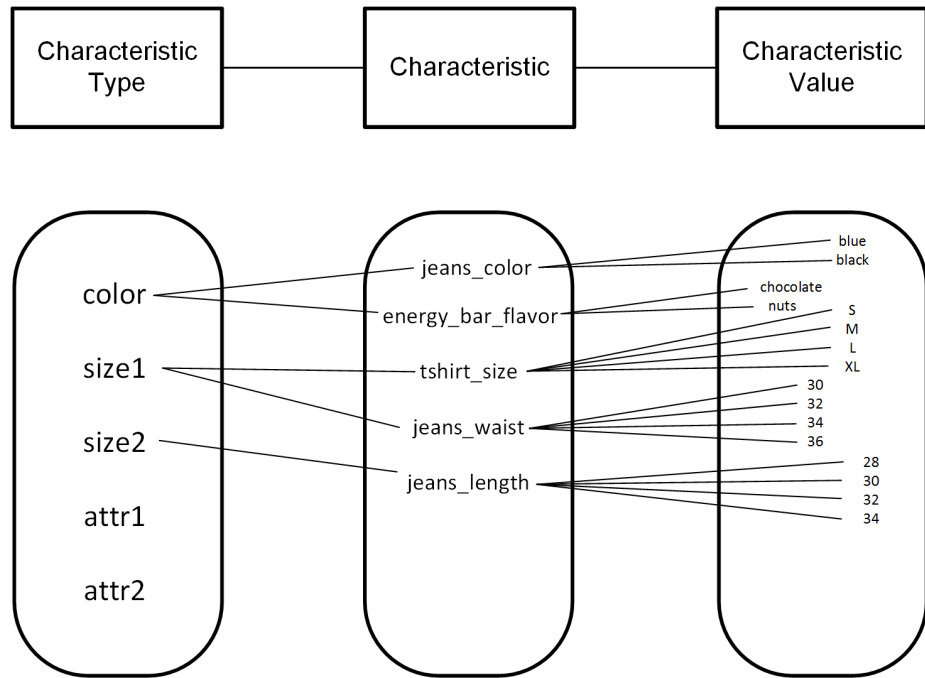


Figure 6: Example Characteristics for Color and Sizes

- You define only those characteristics that you need for the particular product. For example, one of your products is a pair of jeans in color blue that is sold in sizes S, M, and L. You want to consider only the *Color* characteristic for this product. The sales of the variants (sizes) are then aggregated as follows for this color: $\text{blue} = \text{S/blue} + \text{M/blue} + \text{L/blue}$
- The system assumes that all variants of the same generic product have identical characteristics.

Messages

Messages triggered by a configuration or calculation issue are written to the following message classes in package /DMF/DIST_CURVE:

- Configuration messages: /DMF/DCC
- Calculation messages: /DMF/DCE

Calculation results

- DDF provides the following output to the consuming application:
 - Target product locations
 - Attribute value IDs for COLOR_ATR_VAL_ID, SIZE1_ATR_VAL_ID, SIZE2_ATR_VAL_ID, ATR1_ATR_VAL_ID, and ATR2_ATR_VAL_ID
 - Distribution values (sum of sales) QUOTE_VALUE
 - The output is calculated on the fly and is not accessible via SAP HANA views.
 - You can modify the output using the BAdIs under [Cross-Application Components](#) > [Demand Data Foundation](#) > [Data Maintenance](#) > [Distribution Curve Configuration](#) > [Enhancements Using Business Add-Ins](#):
 - [BAdI: Check and Modify Distribution Curve Results](#)
 - [BAdI: Distribution Curve Field and Functional List - Entities](#)
 - [BAdI: Distribution Curve Field and Functional List - Location Group](#)
 - [BAdI: Distribution Curve Field and Functional List - Product Group](#)
 - [BAdI: Distribution Curve Field and Functional List - Reference Season](#)
- For more information, see the documentation of each BAdI (transaction **SPRO**).

7.5.2 Calculating Distribution Curves for External System

Use the /DMF/DC_COMPUTE function module to perform a Remote Function Call (RFC) from an external system to Demand Data Foundation (DDF) to calculate distribution curves. No specific configuration is required on the DDF side.

Prerequisites

- **Supported time series**
Your historical sales data must be available as point-of-sale data (time series source POS_TS).
- **Supported hierarchies**
You cannot use time-dependent master data hierarchies.

Implementation

Table 49: Calculation of Distribution Curves in DDF for External System

RFC function module	The implementation is based on the following: <ul style="list-style-type: none">• Function module /DMF/DC_COMPUTE in package /DMF/DISTRIBUTION_CURVE• RFC service /DMF/DC_COMPUTE in package /DMF/DIST_CURVE
---------------------	---

Calculation request	<p>You request the calculation of distribution curves as follows:</p> <ul style="list-style-type: none"> • From the external system using the /DMF/DC_COMPUTE RFC function module • To the DDF module in SAP Customer Activity Repository
Calculation scope	<p>You define the calculation scope using the import parameters of the function module:</p> <ul style="list-style-type: none"> • You can calculate distribution curves for the following: <ul style="list-style-type: none"> ◦ all variants of the specified generic product in the specified location or ◦ all variants of the specified product group (product hierarchy node) in the specified location group (location hierarchy node) • You can define the following product attributes: <ul style="list-style-type: none"> ◦ <i>COLOR</i> ◦ <i>SIZE1</i> ◦ <i>SIZE2</i> • You can further narrow down the selection by specifying additional import parameters (such as season information or a sales period). • The calculation is based on the aggregated historical sales of all the product variants in the specified locations.
Aggregation concept	<ul style="list-style-type: none"> • The historical sales of the product variants in the specified locations are aggregated along the specified import parameters. • You define only those parameters that you need. • Example aggregation: You have a T-shirt in color red that is sold in sizes S, M, and L. You want to consider only the <i>COLOR</i> attribute. The sales of the variants will then be aggregated as follows for this color: $red = S/red + M/red + L/red$
Calculation result	<ul style="list-style-type: none"> • The output is a quote value for each attribute value combination for the specified attributes. The quote value is an aggregation of the unit sales of the different product variants in the different locations that share the identical attribute value combination of the specified attributes. • The output can also be consumed in the <code>sap.is.ddf.dc::ExtDistributionCurveQuery</code> SAP HANA view in SAP Customer Activity Repository.

Configuration and Execution

1. Execute transaction **SE37**, display the /DMF/DC_COMPUTE function module, and consult the [Function Module Documentation](#). You can find here detailed information on the prerequisites, import and export parameters, and a configuration example.
2. Follow the instructions.
3. Execute the function module from the external system.

7.6 Configuring Unified Demand Forecast




Configure the UDF module in SAP Customer Activity Repository to adjust demand modeling and forecasting for your scenario. You can select from multiple UDF features and also set up forecast visualization with the *Analyze Forecast* SAP Fiori app.

Prerequisites




- You are aware that these are advanced configurations that should only be done by experts (such as consultants, forecast analysts, or demand planners).

Caution

The default settings and seed data provided for modeling and forecasting have been chosen very carefully. Do not change them until you have conducted an in-depth statistical analysis and have tested and validated each potential adjustment or addition. Otherwise, the modeling and forecasting functions might be compromised.






- You are aware that it is always better to enrich the demand model with additional information than to correct the forecast with absolute values afterwards. The model fit is recalculated with each run. If you can adjust the configuration to improve the model fit, this improvement is sustainable and also benefits the forecast.
- You have set up UDF as described in the *Complete UDF Setup* section in the *Common Installation Guide* (for new installations) or the *Common Upgrade Guide* (for upgrade scenarios). You can find both guides on SAP Help Portal under <https://help.sap.com/viewer/p/CARAB>  *<Version>*  *Installation and Upgrade* .

Troubleshooting

- If you are experiencing issues when configuring, testing, or operating UDF, see [Troubleshooting for UDF Modeling and Forecasting \[page 227\]](#).
- If you are experiencing issues in the database, see the *SAP HANA Troubleshooting and Performance Analysis Guide* for your SAP HANA Platform version under https://help.sap.com/viewer/p/SAP_HANA_PLATFORM  *<Version>*  *Administration* .

Configuration Procedures

Note

The following procedures describe how to configure specific UDF features. For more information about each feature, see <https://help.sap.com/viewer/p/CARAB>  *<Version>*  *Application Help*  *SAP Customer Activity Repository*  *Unified Demand Forecast* .

[Configure Forecast Visualization with the Analyze Forecast SAP Fiori App \[page 169\]](#)

You can use the *Analyze Forecast* app to visualize detailed sales, modeling, and forecasting information for performing in-depth analyses.

[Configure Hierarchical Priors \(HPRs\) \[page 170\]](#)

Configure the calculation of hierarchical priors to enhance the modeling of products for which little or no historical sales data or promotional data is available. With hierarchical priors, such products can “inherit” existing modeling results from suitable existing products along the hierarchies (product hierarchies, location hierarchies, relationships between generic products and their variants).

[Configure User DIFs \[page 174\]](#)

User DIFs are generic demand influencing factors that you can define as additional input for modeling and forecasting. User DIFs complement the system DIFs. They allow you to feed external past and future events and factors into the system that have an impact on consumer demand.

[Configure Ignore DIFs \[page 176\]](#)

Ignore DIFs are Boolean user DIFs that you configure with usage mode *Exclude Observations*.

[Configure Reference Products \[page 177\]](#)

You can use reference products to enhance the modeling of products for which little or no historical data is available (such as new products without past sales or promotions).

[Configure Placeholder Products \[page 178\]](#)

You can create placeholders for products that are still being planned and for which you do not yet have all the information to create them in your source master data system (such as SAP ERP). Placeholder products are useful during promotion planning or assortment planning, for example.

[Configure Forecasting Based on Aggregated Product Data \[page 180\]](#)

Running modeling and forecasting based on aggregated historical sales data is especially beneficial for seasonal products with short lifecycles (such as fashion). In cases where the data at the level of the individual product location (variant) and day is sparse, the aggregated data (generic product by color) can help achieve a better signal strength for statistical modeling and forecasting.

[Configure Demand Decomposition \[page 183\]](#)

You can configure UDF to break down the modeled historical demand and the forecasted future demand by demand influencing factor (DIF). This “demand decomposition” shows you how much of the total value can be attributed to baseline business and how much is due to specific DIFs. Examples include offers, prices, tactics, public holidays, or seasonality.

[Configure Holdout Forecasts \[page 184\]](#)

Holdout forecasts allow you to compare the generated forecast against the actual sales data. You withhold some of this data from being considered in the modeling and forecasting processes for that period, and then you compare the results to the actual sales data that was withheld.

[Configure Forecast Confidence Index \(FCI\) \[page 186\]](#)

When you are planning offers and performing what-if forecasts in SAP Promotion Management, for example, the FCI can help you determine the best offer terms and conditions. You can configure UDF to calculate the FCI when generating the what-if forecast.

[Optimize UDF Performance \[page 188\]](#)

Get recommendations on how you can optimize modeling and forecasting with UDF for different scenarios.

7.6.1 Configure Forecast Visualization with the Analyze Forecast SAP Fiori App

You can use the *Analyze Forecast* app to visualize detailed sales, modeling, and forecasting information for performing in-depth analyses.

Example Use Case

A business user (such as a replenishment planner) reports an unaccountably high forecast for specific product locations. The too high forecast was used as the basis for a too high order proposal. The forecast analyst in the organization is consulted and asked to explain the forecast results (typically, only a few product locations are affected). Using the *Analyze Forecast* app, the analyst drills down into the sales, modeling, and forecast data of the product locations.

Configuration Help

App Details

For more information about the app, see <https://help.sap.com/viewer/p/CARAB> >> <Version> > *Application Help* > *SAP Customer Activity Repository* > *SAP Fiori for SAP Customer Activity Repository* > *Standalone SAP Fiori Apps for SAP Customer Activity Repository* > *Analyze Forecast* >.

Performance Considerations

You can configure the amount of additional forecast-relevant data that should be calculated and persisted for your analyses. You can then trigger reruns of modeling and forecasting where you would calculate and persist additional data only for the affected product locations.

For example, you might decide to generate the decomposition time series to break down the modeling results and/or the forecast results by demand influencing factor (DIF). For more information, see [Configure Demand Decomposition \[page 183\]](#).

Rerunning modeling or forecasting allows you to save runtime performance and to benefit from sizing enhancements for the main run. You can trigger reruns in diagnostic mode using a granular configuration for the affected product locations. For more information about granular configuration options, see <https://help.sap.com/viewer/p/CARAB> >> *Version: 2.0 SPS2 (or higher)* > *Application Help* > *SAP Customer Activity Repository* > *What's New in SAP Customer Activity Repository* > *What's New in SAP Customer Activity Repository 3.0 FP1* > *Granular Configuration* >.

Procedure

1. For configuration instructions, see the *Configure the Analyze Forecast App* section of the *Common Installation Guide* (for new installations) or the *Common Upgrade Guide* (for upgrade scenarios). You can find both guides under <https://help.sap.com/viewer/p/CARAB> >> <Version> > *Installation and Upgrade*.

Parent topic: [Configuring Unified Demand Forecast \[page 167\]](#)

Related Information

- [Configure Hierarchical Priors \(HPRs\) \[page 170\]](#)
- [Configure User DIFs \[page 174\]](#)
- [Configure Ignore DIFs \[page 176\]](#)
- [Configure Reference Products \[page 177\]](#)
- [Configure Placeholder Products \[page 178\]](#)
- [Configure Forecasting Based on Aggregated Product Data \[page 180\]](#)
- [Configure Demand Decomposition \[page 183\]](#)
- [Configure Holdout Forecasts \[page 184\]](#)
- [Configure Forecast Confidence Index \(FCI\) \[page 186\]](#)
- [Optimize UDF Performance \[page 188\]](#)

7.6.2 Configure Hierarchical Priors (HPRs)

Configure the calculation of hierarchical priors to enhance the modeling of products for which little or no historical sales data or promotional data is available. With hierarchical priors, such products can “inherit” existing modeling results from suitable existing products along the hierarchies (product hierarchies, location hierarchies, relationships between generic products and their variants).

Prerequisites

Before you can calculate HPRs, you must have completed the initial modeling of your business. This allows the system to use the modeling results of the existing products to calculate the HPRs for the new products. The calculated HPRs are then used as input to model the new products, enhancing the understanding of demand at a more granular level than the default values (global priors). This in turn improves the basis for forecasting.



Figure 7: End-to-end modeling and forecasting with HPRs

→ Tip

How often you should run each step

You only need to do the initial modeling once.

In day-to-day operations, you would typically repeat the HPR calculation and the subsequent modeling at regular intervals, as suitable for your scenario.

Using the modeling results (which are always persisted), you can then run forecasting. Forecasting is the final and most frequent step. You can run it as often as required for your scenario. The following execution modes are available:

- Production forecast: You want to use the results in the productive system and in follow-on business processes.
- Diagnostic forecast: You want to perform analyses, such as holdout forecasts.
- What-if forecast: You want to gauge the impact of a potential future course of action (for example, when planning offers).

Restrictions

- There is no interaction between product locations with different multichannel information (that is, sales channel, order channel, distribution chain). Each combination of multichannel information is treated separately.

i Note

Sizing Consideration — Multichannel Keys for New Product Locations

Each multichannel combination is calculated separately.

To calculate the HPRs for new products locations, the system tries to determine the multichannel keys from the neighboring products in the hierarchy. This means that if a product location under the same node already has model parameter estimates in a specific product-location-multichannel combination, this multichannel key is used for the new product location under this node.

- As a result, it is not possible to calculate HPRs for product locations with a completely new channel (for example, when opening a new Web shop).
- Similarly, it is not possible to calculate HPRs for a completely new product in a completely new location (for example, when opening a new fashion store selling a new fashion collection).

Customizing

- You can configure the calculation of hierarchical priors in transaction **SPRO** under [► Cross-Application Components ► Demand Data Foundation ► Modeling and Forecasting ► Configure Hierarchical Priors ►](#). For more information, see the Customizing activity documentation.
- For sizing reasons, we strongly recommend to change the setting for the generation of the covariance matrix from “full” to “reduced”. The reduced covariance matrix is sufficient for HPRs and it can be generated more

quickly. You can change the setting in [Cross-Application Components](#) > [Demand Data Foundation](#) > [Modeling and Forecasting](#) > [Define Modeling Control Settings](#). Use the MOD_COV_REDUCED configuration type code. For more information, see the Customizing activity documentation.

Configuration Help

To determine from which existing products a new product should best “inherit” the values, the system considers different types of hierarchical information. You can configure how each type should be weighted against the other types. This allows you to adapt the generation of hierarchical priors to your own hierarchies. The following types are considered:

1. Relationships between generic products and their variants: A product in a specific location inherits values from **other** products (in the same location) with a relationship to the **same** generic product. This allows you to better understand DIF effects across the variants of a generic product in a particular location.
2. Product hierarchy (such as the article hierarchy or merchandise category hierarchy): A product in a specific location inherits values from **other** products in the **same** location. This allows you to better understand DIF effects across all products of a hierarchy node for a particular location.
3. Location hierarchy: A product in a specific location inherits values from the **same** product in **other** locations. This allows you to better understand DIF effects across all locations of a hierarchy node for a particular product.

Based on the configured weights, the results of the first two steps are combined into one intermediate result. This is then combined with the result of the third step to generate the final result.

For configuration examples, see the long texts of the following data elements:

- /DMF/HPR_MAX_PROD_LEVELS
- /DMF/HPR_MAX_LOC_LEVELS
- /DMF/HPR_WGT_GEN_VAR

Expert Configurations

There might be situations when you need to override or fine-tune the default settings that you have made in Customizing. The default settings are saved in the /DMF/UMD_CONFIG table (maintenance view /DMF/V_UMD_CONFIG). You can override them by changing selected model parameters in the /DMF/UMD_PAR_CFG model configuration table.

Caution

These are advanced configurations that should only be done by experts (such as consultants, forecast analysts, or demand planners).

The default settings and seed data provided for modeling and forecasting have been chosen very carefully. Do not change them until you have conducted an in-depth statistical analysis and have tested and validated each potential adjustment or addition. Otherwise, the modeling and forecasting functions might be compromised.

Follow these steps:

1. Execute transaction **SM34** and open the `/DMF/V_DMD_DEF_D` (*Demand Model Definition Details*) view cluster. You can use this view cluster to change model parameters in the `/DMF/UMD_PAR_CFG` table.
2. If you are prompted for a *Work Area*, select the demand model definition for which you want to change the parameter.
3. Select an existing parameter and display the details.

i Note

You can also add new entries. For instructions, see [Configure User DIFs \[page 174\]](#).

4. Change the parameter settings as desired.

Examples

- In *Influence HPRs*, you can define the influence of the hierarchical priors against the global priors. For example, if you have a well-defined product hierarchy that provides a good basis for the HPR calculation, you might want to explicitly use the calculated HPRs (and not the global priors) in subsequent modeling. You can then use the new parameter to increase the influence of the calculated HPRs.
 - In *Additional Weight*, you can add user-defined weights to the calculated hierarchical prior weights for selected demand influencing factors (DIFs). For example, if you have products whose sales are heavily influenced by the Christmas season, you can use the new parameter to increase the weight of this calendar event.
5. Save your changes.

Execution

To calculate the hierarchical priors based on your configuration, follow these steps:

1. Execute transaction **NWBC** and choose **Services > Schedule Model and Forecast**.
2. Select the *Calculate Hierarchical Priors* service.
3. Make the other settings for this job and either execute it directly or schedule it for a later point in time.

This is the recommended procedure. Alternatively, you can directly execute the `/DMF/UCALC_HIER_PRIORS` function module (transaction **SE37**).

Results

The system calculates the hierarchical priors for all product locations below the specified node in the specified product and location hierarchies and the relationship between the generic product and the variants.

The results are written to the `/DMF/UMD_PRI` table and used as input for modeling.

Parent topic: [Configuring Unified Demand Forecast \[page 167\]](#)

Related Information

[Configure Forecast Visualization with the Analyze Forecast SAP Fiori App \[page 169\]](#)

[Configure User DIFs \[page 174\]](#)

[Configure Ignore DIFs \[page 176\]](#)

[Configure Reference Products \[page 177\]](#)

[Configure Placeholder Products \[page 178\]](#)

[Configure Forecasting Based on Aggregated Product Data \[page 180\]](#)

[Configure Demand Decomposition \[page 183\]](#)

[Configure Holdout Forecasts \[page 184\]](#)

[Configure Forecast Confidence Index \(FCI\) \[page 186\]](#)

[Optimize UDF Performance \[page 188\]](#)

7.6.3 Configure User DIFs









User DIFs are generic demand influencing factors that you can define as additional input for modeling and forecasting. User DIFs complement the system DIFs. They allow you to feed external past and future events and factors into the system that have an impact on consumer demand.

Procedure

Note

There is no dedicated UI available. You configure user DIFs by editing tables on the ABAP back-end server.

Follow these steps:

1. Carefully read the use cases described under <https://help.sap.com/viewer/p/CARAB>  *<Version>*  *Application Help*  *SAP Customer Activity Repository*  *Unified Demand Forecast*  *Features*  *Demand Influencing Factors (DIFs)*  *User DIFs* .

Caution

If you want to configure user DIFs for *Use case 3: Enhance the standard demand model with additional DIFs*, you must first conduct an in-depth statistical analysis of the data to determine how the effect on the demand can be expressed mathematically as a DIF. We strongly recommend that you contact SAP for support.

2. If you want to create a user DIF for a **recurring event** (such as the back-to-school period), first check that this user DIF does not exist already. If it does, skip the next two steps and only update the events in the existing user DIF (see the last step below).
This is the recommended approach because it saves you from having to define a new default prior value manually. Instead, you let the system derive the default prior value automatically when calculating the hierarchical priors.

3. Create a user DIF:
 1. Execute transaction **SM30** and open maintenance view `/DMF/V_DIF`.
 2. Choose *New Entries* and enter the data for your new user DIF. For example, here you select the suitable DIF type (*Boolean* or *Metric*).
4. Add the new user DIF to the demand model definition and define the parameters:
 1. Execute transaction **SM34** and open view cluster `/DMF/VC_MOD_DEF`.
 2. Select the desired demand model definition and choose *Demand Model Definition Details*.
 3. Choose *New Entries* and define the user DIF details:
 - In *DIF ID*, select your user DIF.
 - In *Model Component*, select `PMGA:M`. We strongly recommend to use this multiplicative model component.
The additive model component `PMGA:A` should only be used after a careful analysis of the data and specific scenario. Contact SAP for support in this case.
 - In *DIF Usage Mode*, select *On* for a regular user DIF.
For an Ignore DIF, select *Exclude Observations*.
 - In *Default Prior Value*, specify the initially expected effect of your user DIF. To determine this value, use the following formula:
 $(1 + p)$, where **p** is the expected percentage change as a decimal
Example: You know that roadworks are planned in front of your store and expect a 30% reduction in sales during this period. This means, **p = -0.30**. To determine the default prior value, you would then calculate **$\ln(1 - 0.30)$** .
 - In *Default Prior Weight*, leave the default value of **1**. The prior weight is used to modulate the initially expected DIF effect against the actual future sales when the event occurs.
We strongly recommend to keep this setting. Values other than the default must first be tested and validated in depth.
 - If applicable to your scenario, specify a suitable *Parameter Minimum* (for negative DIF effects) or *Parameter Maximum* (for positive DIF effects). For example, you would expect a reduction in price to always lead to an increase in sales (that is, to have a positive DIF effect).
5. Create the events when the new user DIF occurs. Note that no user interface is available for this step:
 1. Insert the user DIF data into the `/DMF/MDIF_USRDIF` staging table.
6. Transfer the data from the staging tables to the production tables. This is a general step that you perform during regular inbound processing. For more information, see <https://help.sap.com/viewer/p/CARAB>
 ▶ <Version> ▶ *Application Help* ▶ *SAP Customer Activity Repository* ▶ *Demand Data Foundation* ▶ *Integration Information* ▶ *Inbound Processing* ▶

Result

When you now run modeling and forecasting in production mode, the system will create the data for your new user DIF.

Parent topic: [Configuring Unified Demand Forecast \[page 167\]](#)

Related Information

[Configure Forecast Visualization with the Analyze Forecast SAP Fiori App \[page 169\]](#)
[Configure Hierarchical Priors \(HPRs\) \[page 170\]](#)
[Configure Ignore DIFs \[page 176\]](#)
[Configure Reference Products \[page 177\]](#)
[Configure Placeholder Products \[page 178\]](#)
[Configure Forecasting Based on Aggregated Product Data \[page 180\]](#)
[Configure Demand Decomposition \[page 183\]](#)
[Configure Holdout Forecasts \[page 184\]](#)
[Configure Forecast Confidence Index \(FCI\) \[page 186\]](#)
[Optimize UDF Performance \[page 188\]](#)

7.6.4 Configure Ignore DIFs

Ignore DIFs are Boolean user DIFs that you configure with usage mode *Exclude Observations*.

Procedure

i Note

There is no dedicated UI available. You configure Ignore DIFs by editing tables on the ABAP back-end server.

1. Follow the same steps as in [Configure User DIFs \[page 174\]](#).

Parent topic: [Configuring Unified Demand Forecast \[page 167\]](#)

Related Information

[Configure Forecast Visualization with the Analyze Forecast SAP Fiori App \[page 169\]](#)
[Configure Hierarchical Priors \(HPRs\) \[page 170\]](#)
[Configure User DIFs \[page 174\]](#)
[Configure Reference Products \[page 177\]](#)
[Configure Placeholder Products \[page 178\]](#)
[Configure Forecasting Based on Aggregated Product Data \[page 180\]](#)
[Configure Demand Decomposition \[page 183\]](#)
[Configure Holdout Forecasts \[page 184\]](#)
[Configure Forecast Confidence Index \(FCI\) \[page 186\]](#)
[Optimize UDF Performance \[page 188\]](#)

7.6.5 Configure Reference Products

You can use reference products to enhance the modeling of products for which little or no historical data is available (such as new products without past sales or promotions).

Prerequisites

- The reference product has been modeled, so that the new product or the placeholder product can inherit the modeling results.
- The reference product is assigned to the desired new product or placeholder product (table `/DMF/PROD`, fields `CONS_REF_PROD_ID` and `CONS_REF_LOC_ID`).
- The two field values point to a valid product location (table `/DMF/PRODLOC`, fields `PROD_ID` and `LOC_ID`). The relationship is always: product location B ↔ product location A.
- Optional: A consumption reference factor has been specified (field `CONS_REF_FACTOR`). This factor is generally provided by the source master data system and it can be changed in DDF.
Example: You want to use smart phone model X1 as the reference product for the new smart phone model X2. For X2, you expect a 10% increase in sales. You can then use the reference factor to indicate this expected change in the sales behavior.

Procedure

You have the following options:

- You can set up reference products in your SAP ERP system and receive the master data from there.
- Alternatively, you can set up reference products directly in Demand Data Foundation (DDF). For more information, see <https://help.sap.com/viewer/p/CARAB> > <Version> > *Application Help* > *SAP Customer Activity Repository* > *Demand Data Foundation* > *General Services* > *Maintenance Services* > *Maintain Product Locations* >.

Result

When modeling the demand for the new product, the system uses the historical data and prior values from the assigned reference product at the reference location.

Parent topic: [Configuring Unified Demand Forecast \[page 167\]](#)

Related Information

[Configure Forecast Visualization with the Analyze Forecast SAP Fiori App \[page 169\]](#)

[Configure Hierarchical Priors \(HPRs\) \[page 170\]](#)

[Configure User DIFs \[page 174\]](#)

[Configure Ignore DIFs \[page 176\]](#)

[Configure Placeholder Products \[page 178\]](#)

[Configure Forecasting Based on Aggregated Product Data \[page 180\]](#)

[Configure Demand Decomposition \[page 183\]](#)

[Configure Holdout Forecasts \[page 184\]](#)

[Configure Forecast Confidence Index \(FCI\) \[page 186\]](#)

[Optimize UDF Performance \[page 188\]](#)

7.6.6 Configure Placeholder Products

You can create placeholders for products that are still being planned and for which you do not yet have all the information to create them in your source master data system (such as SAP ERP). Placeholder products are useful during promotion planning or assortment planning, for example.

Context

- You create the placeholder product as a temporary product in Demand Data Foundation (DDF) and assign a reference product to it. From here, you can later transfer it to the source master data system, where it can be converted into an actual product. Once the actual product is imported into DDF, the placeholder product is replaced with the actual product.
- You can use placeholder products in modeling and forecasting with Unified Demand Forecast (UDF):
 - Placeholder products are treated the same way as products that you import from or integrate with your master data system.
 - If the assigned reference product has been previously modeled, the forecast is scaled by the reference factor. You can define this factor in the placeholder product master data.
 - If the reference product has not been previously modeled or is invalid, the forecast is generated based on the prior values.

Prerequisites

i Note

You can identify placeholder products by their status (table `/DMF/PROD`, field `PROD_STATUS_CD`, status `03 (PHP)`).

- The placeholder product must have a reference product assigned to it (table /DMF/PHP, field REF_PRODUCT_ID).
The relationship is always: product B ← product A.
- The placeholder product must be active (table /DMF/PHP, field PHP_STATUS_CD). The field value must not be 05 (Deleted).

Procedure

1. You configure placeholder products in Customizing (transaction **SPRO**). See the Customizing activities and their documentation under ► [Cross-Application Components](#) ► [Demand Data Foundation](#) ► [Data Maintenance](#) ► [Placeholder Products](#) ►.

More Information

See the following sections under <https://help.sap.com/viewer/p/CARAB> ► [<Version>](#) ► [Application Help](#) ► [SAP Customer Activity Repository](#) ► [Demand Data Foundation](#) ►:

- For information on the placeholder product master data, see ► [Data Management](#) ► [Master Data](#) ► [Placeholder Product](#) ►.
- For information on the placeholder product maintenance service in transaction **NWBC**, see ► [General Services](#) ► [Maintenance Services](#) ► [Maintain Placeholder Products](#) ►.

Parent topic: [Configuring Unified Demand Forecast](#) [page 167]

Related Information

[Configure Forecast Visualization with the Analyze Forecast SAP Fiori App](#) [page 169]

[Configure Hierarchical Priors \(HPRs\)](#) [page 170]

[Configure User DIFs](#) [page 174]

[Configure Ignore DIFs](#) [page 176]

[Configure Reference Products](#) [page 177]

[Configure Forecasting Based on Aggregated Product Data](#) [page 180]

[Configure Demand Decomposition](#) [page 183]

[Configure Holdout Forecasts](#) [page 184]

[Configure Forecast Confidence Index \(FCI\)](#) [page 186]

[Optimize UDF Performance](#) [page 188]

7.6.7 Configure Forecasting Based on Aggregated Product Data

Running modeling and forecasting based on aggregated historical sales data is especially beneficial for seasonal products with short lifecycles (such as fashion). In cases where the data at the level of the individual product location (variant) and day is sparse, the aggregated data (generic product by color) can help achieve a better signal strength for statistical modeling and forecasting.

Prerequisites

For implementation details and restrictions, see the *Forecast Based on Aggregated Product Data* section under <https://help.sap.com/viewer/p/CARAB> ►► *Application Help* ► *SAP Customer Activity Repository* ► *Unified Demand Forecast* ► *General Services* ►.

Procedure

1. Select the aggregation profile for your scenario:

Table 50:

Your scenario	Value of /DMF/AGGR_PROFILE_ID	Description
SAP Allocation Management (in-season fill-in)	0001	<p>If you are using SAP Allocation Management, you benefit from out-of-the-box integration of this UDF forecasting feature.</p> <p>Both configuration and scheduling are performed on the side of the consuming application.</p> <p>If you select this aggregation profile, the system aggregates the historical sales information of the product variants (sizes) based on the specified generic product and the specified location. The color information is derived automatically. The aggregated data is used to generate the demand model for the generic product. Based on this aggregated model, the system then generates the forecast.</p> <p>For output, you get a daily forecast value for the generic product, by color, across all variants, in this location, for the specified time period.</p>
Standalone scenario	0001	<p>If you are not using SAP Allocation Management, you can still use this aggregation profile to generate forecasts for generic products. For instructions, see the next steps.</p>
No aggregation	Blank (default)	<p>You get modeling and forecasting results at the product location level.</p>

2. In the standalone scenario, execute the /DMF/OP_MOD_PDIMLDIM_JOB modeling report to create an aggregated demand model.

Note

In the SAP Allocation Management scenario, this step is already fully integrated. The execution is scheduled by the consuming application.

1. Execute transaction **SE38**, specify the report name, and choose *Execute*.

2. The following values are available (for more information, see the [F1](#) system documentation):
 - Job ID
 - Diagnostic ID
 - Time Series Source
 - Model End Date
 - Master Data System
 - Aggregation Profile ID (select 0001)
 - Product Dimension ID (you only need to specify the generic product; the system will automatically derive the colors and variants)
 - Location Dimension ID (currently limited to a single location, that is, the dimension must always be 1)
 - Location Dimension Type Code
 - Sales Organization ID
 - Distribution Channel ID
 - Order Channel ID
3. Make your settings and again choose *Execute*.
3. In the standalone scenario, execute the `/DMF/OP_FCST_PDIMLDIM_JOB` forecasting report to generate the forecast for the modeled generic products.

i Note

In the SAP Allocation Management scenario, this step is already fully integrated. The execution is scheduled by the consuming application.

Proceed the same way as for modeling.

4. Use the generated forecasts as required for your scenario.

Parent topic: [Configuring Unified Demand Forecast \[page 167\]](#)

Related Information

[Configure Forecast Visualization with the Analyze Forecast SAP Fiori App \[page 169\]](#)

[Configure Hierarchical Priors \(HPRs\) \[page 170\]](#)

[Configure User DIFs \[page 174\]](#)

[Configure Ignore DIFs \[page 176\]](#)

[Configure Reference Products \[page 177\]](#)

[Configure Placeholder Products \[page 178\]](#)

[Configure Demand Decomposition \[page 183\]](#)

[Configure Holdout Forecasts \[page 184\]](#)

[Configure Forecast Confidence Index \(FCI\) \[page 186\]](#)

[Optimize UDF Performance \[page 188\]](#)

7.6.8 Configure Demand Decomposition

You can configure UDF to break down the modeled historical demand and the forecasted future demand by demand influencing factor (DIF). This “demand decomposition” shows you how much of the total value can be attributed to baseline business and how much is due to specific DIFs. Examples include offers, prices, tactics, public holidays, or seasonality.

Configuration Help

- Sizing:

Caution

Depending on the scope of your business, the demand decomposition can create a large data set, and the original hardware sizing needs to be taken into account.

For more information about sizing for your scenario, see <https://help.sap.com/viewer/p/CARAB>

▶ <Version> ▶ *Additional Information* ▶ *Sizing for CARAB* ▶

For general information about sizing for SAP solutions, see <http://service.sap.com/sizing>.

- Use:

➔ Recommendation

Mainly, you should use the demand decomposition for support and troubleshooting purposes, that is, to analyze the modeling or forecasting results for a limited number of products. You can use the *Analyze Forecast* SAP Fiori app to visualize the decomposition results.

Procedure

Note

By default, the demand decomposition is deactivated.

1. For performance considerations relating to the demand decomposition, see SAP Note [2483321](#).
2. Activate the generation of the decomposition time series in Customizing (transaction **SPRO**):
 - For modeling: ▶ *SAP Customer Activity Repository* ▶ *Demand Data Foundation* ▶ *Modeling and Forecasting* ▶ *Define Modeling Control Settings* ▶, configuration type code MOD_OUTPUT_DECOMP
 - For forecasting: ▶ *SAP Customer Activity Repository* ▶ *Demand Data Foundation* ▶ *Modeling and Forecasting* ▶ *Define Forecasting Control Settings* ▶, configuration type code FC_OUTPUT_DECOMPFor more information, see the documentation of each activity.

Parent topic: [Configuring Unified Demand Forecast \[page 167\]](#)

Related Information

[Configure Forecast Visualization with the Analyze Forecast SAP Fiori App \[page 169\]](#)

[Configure Hierarchical Priors \(HPRs\) \[page 170\]](#)

[Configure User DIFs \[page 174\]](#)

[Configure Ignore DIFs \[page 176\]](#)

[Configure Reference Products \[page 177\]](#)

[Configure Placeholder Products \[page 178\]](#)

[Configure Forecasting Based on Aggregated Product Data \[page 180\]](#)

[Configure Holdout Forecasts \[page 184\]](#)

[Configure Forecast Confidence Index \(FCI\) \[page 186\]](#)

[Optimize UDF Performance \[page 188\]](#)

7.6.9 Configure Holdout Forecasts

Holdout forecasts allow you to compare the generated forecast against the actual sales data. You withhold some of this data from being considered in the modeling and forecasting processes for that period, and then you compare the results to the actual sales data that was withheld.

Context

Holdout forecasts are best suited for measuring forecast accuracy in a proof-of-concept, pilot, or periodic analysis.

Holdout forecasts are only available in diagnostic mode and do not affect your production forecast results.

You perform holdout forecasts using the *Schedule Model and Forecast* Web Dynpro service. To access this service from your SAP Easy Access screen, execute transaction **NWBC** and choose ► *Services* ► *Schedule Model and Forecast* ►.

For more information about this service, see <https://help.sap.com/viewer/p/CARAB> ►► *Application Help* ► *SAP Customer Activity Repository* ► *Unified Demand Forecast* ► *General Services* ► *Schedule Model and Forecast* ►.

Prerequisites

For general prerequisites, see [Configuring Unified Demand Forecast \[page 167\]](#).

Execution

To perform a holdout forecast, follow these steps on the *Schedule Model and Forecast* screen:

1. Specify a *Diagnostic_ID* specific to your user.
2. Select a date for the *Model End Date* field based on the holdout period that you want to compare.
3. Model the selected products and locations.
4. Enter the *Forecast Horizon Start Date* for the holdout period and create a forecast.
5. The *Forecast Horizon Duration* defaults to 7 days. If desired, enter a value of **0 - 730** to override the default.

Example

You have 1 year of historical sales data (actuals): from July 1, 2013 through June 30, 2014. You want to hold out 3 months of your actuals to assess the values that will be forecasted:

1. You create a diagnostic ID and set the scope for your test, specifying the products and locations.
2. You set the *Model End Date* to **March 31, 2014**, and the *Forecast Horizon Start Date* to **April 1, 2014**, with a duration of **90** days.
3. You run modeling and forecasting.
4. You validate the results against the actuals.

Parent topic: [Configuring Unified Demand Forecast \[page 167\]](#)

Related Information

[Configure Forecast Visualization with the Analyze Forecast SAP Fiori App \[page 169\]](#)

[Configure Hierarchical Priors \(HPRs\) \[page 170\]](#)

[Configure User DIFs \[page 174\]](#)

[Configure Ignore DIFs \[page 176\]](#)

[Configure Reference Products \[page 177\]](#)

[Configure Placeholder Products \[page 178\]](#)

[Configure Forecasting Based on Aggregated Product Data \[page 180\]](#)

[Configure Demand Decomposition \[page 183\]](#)

[Configure Forecast Confidence Index \(FCI\) \[page 186\]](#)

[Optimize UDF Performance \[page 188\]](#)

7.6.10 Configure Forecast Confidence Index (FCI)

When you are planning offers and performing what-if forecasts in SAP Promotion Management, for example, the FCI can help you determine the best offer terms and conditions. You can configure UDF to calculate the FCI when generating the what-if forecast.

Use

Caution

The FCI should not be interpreted as a measure of the accuracy of the forecast compared to the actual sales. Instead, it is a measure of the **amount and quality of the statistical input data** based on which the forecast was generated.

You can use the FCI to identify issues in this input data. For example, a low FCI value might indicate that there is no sales history available for a particular offer type or offer combination. Or that there is no good “fit” between the generated demand model and the actual sales history.

Configuration Help

- **Value range of the calculated FCI:**
 - 0: High uncertainty in the forecast value based on the historical input data
 - 1: High confidence in the forecast value based on the historical input data
- **FCI reasons:**
 - The system can estimate which of the demand influencing factors (DIFs) considered for a particular forecast is most likely determinant in causing a low FCI value.
For example, there might be no sales history available for a specific offer combination. Once you know the reason for a low FCI, you can take corrective measures. For example, you might decide to change the terms of a planned offer.
 - For an overview of the available FCI reasons, see the *Low FCI* messages in the `/DMF/FC_INFO` message class (transaction **SE91**).
Examples include:
 - 002: Limited sales history*
 - 003: No or limited sales history for offer combination*
 - 005: High variability of sales history volume*
 - 010: Net price beyond confident historical range of average*
 - 021: Offer type has limited sales history*

Note

The reasons causing a low FCI can be detailed out. You can find this FCI decomposition time series in the `/DMF/UFCI_DECOMP` output table. For example, here you can see what percentage of the FCI was due to a deviation from the historical price.

Procedure

To configure UDF to calculate the FCI, do the following steps in Customizing (transaction **SPRO**):

1. Ensure that the full covariance matrix is generated during modeling. The full covariance matrix is mandatory for calculating the FCI:
 1. Open the Customizing activity ► [Cross-Application Components](#) ► [Demand Data Foundation](#) ► [Modeling and Forecasting](#) ► [Define Modeling Control Settings](#) ►.
 2. Ensure that the `MOD_COV_REDUCED` configuration type code is deactivated for all the time series sources. That is, there must be no configuration value for this parameter. For more information, see the Customizing activity documentation.

i Note

In modeling, the generated covariance matrix is written to the `/DMF/UMD_PAR_COV` table and used as input for forecasting. In forecasting, the FCI value is determined for each forecast value and written to the `/DMF/UFC_TS` table with the forecast results.

2. Optional: Define the values ranges for what constitutes a high, medium, and low FCI:
 1. Open the Customizing activity ► [Cross-Application Components](#) ► [Demand Data Foundation](#) ► [Modeling and Forecasting](#) ► [Define Categories for Forecast Confidence Index](#) ►.
 2. Read the Customizing activity documentation and define the value ranges as required for your scenario.

Parent topic: [Configuring Unified Demand Forecast \[page 167\]](#)

Related Information

[Configure Forecast Visualization with the Analyze Forecast SAP Fiori App \[page 169\]](#)

[Configure Hierarchical Priors \(HPRs\) \[page 170\]](#)

[Configure User DIFs \[page 174\]](#)

[Configure Ignore DIFs \[page 176\]](#)

[Configure Reference Products \[page 177\]](#)

[Configure Placeholder Products \[page 178\]](#)

[Configure Forecasting Based on Aggregated Product Data \[page 180\]](#)

[Configure Demand Decomposition \[page 183\]](#)

[Configure Holdout Forecasts \[page 184\]](#)

[Optimize UDF Performance \[page 188\]](#)

7.6.11 Optimize UDF Performance

Get recommendations on how you can optimize modeling and forecasting with UDF for different scenarios.

Purge Obsolete Master Data

Keep your system slim by regularly removing obsolete records from the database. A purge report is available for this. For more information, see <https://help.sap.com/viewer/p/CARAB> |> <Version> |> *Application Help* |> *SAP Customer Activity Repository* |> *Demand Data Foundation* |> *General Services* |> *Purge Master Data* |>.

Purge Obsolete Exception Message Data

Use the `/DMF/PURGE_EWB_MESSAGES` report to regularly remove exception message data that you no longer need. You don't need to specify parameters for this report. What data is purged depends on how you have configured the exceptions in Customizing, and it depends on what deletions are performed in the *Monitor Exceptions* Web Dynpro service. For more information, see the report documentation (transaction **SE38**).

Delete Obsolete Time Series Data

Use the `/DMF/TS_DELETE` report to regularly remove time series data that you no longer need. For more information, see the report documentation (transaction **SE38**).

Limit Length of Demand History

In general, we recommend that you provide two years of demand history for modeling. This ensures the proper interpretation of seasonality, trend, and other yearly demand influencing factors (DIFs).

However, and depending on how much historical data you have available, you also have the option to limit the length of the history taken into modeling. For one, this allows you to improve run times by limiting the amount of input data. Additionally, you can ensure that modeling (or the understanding of history) runs only on data that is still relevant for your scenario.

You can define the number of history days in Customizing under |> *Cross-Application Components* |> *Demand Data Foundation* |> *Modeling and Forecasting* |> *Define Modeling Control Settings* |>. Use the *Days in Modeling Period* (`MOD_DAYS_IN_PERIOD`) configuration type code.

Optimize Load Balancing

You can optimize the settings of the *Num Records* and *Max Num Processes* parameters for modeling and forecasting scenarios. For more information, see the *Considerations for Demand Modeling and Forecasting* in <https://help.sap.com/viewer/p/CARAB> ► <Version> ► *Application Help* ► *SAP Customer Activity Repository* ► *Demand Data Foundation* ► *General Services* ► *Configure Load Balancing* ►.

Adjust Modeling and Forecasting Control Settings in Customizing

See SAP Note [2483321](#) for recommendations on different modeling and forecasting parameters. Examples include the generation of the covariance matrix or the demand decomposition time series.

Evaluate the recommendations for your specific scenario, then adjust the settings in Customizing under ► *Cross-Application Components* ► *Demand Data Foundation* ► *Modeling and Forecasting* ► *Define Modeling Control Settings* ► and *Define Forecasting Control Settings*. For more information, see the documentation of each activity (transaction **SPRO**).

Optimize SAP HANA Performance

The UDF application function library runs directly in the SAP HANA database. You have multiple options to analyze and optimize the performance of your SAP HANA system. For more information, see the *SAP HANA Troubleshooting and Performance Analysis Guide* for your SAP HANA Platform release under https://help.sap.com/viewer/p/SAP_HANA_PLATFORM ► <Version> ► *Administration* ►.

Parent topic: [Configuring Unified Demand Forecast \[page 167\]](#)

Related Information

[Configure Forecast Visualization with the Analyze Forecast SAP Fiori App \[page 169\]](#)

[Configure Hierarchical Priors \(HPRs\) \[page 170\]](#)

[Configure User DIFs \[page 174\]](#)

[Configure Ignore DIFs \[page 176\]](#)

[Configure Reference Products \[page 177\]](#)

[Configure Placeholder Products \[page 178\]](#)

[Configure Forecasting Based on Aggregated Product Data \[page 180\]](#)

[Configure Demand Decomposition \[page 183\]](#)

[Configure Holdout Forecasts \[page 184\]](#)

[Configure Forecast Confidence Index \(FCI\) \[page 186\]](#)

8 Operation Information

8.1 Monitoring

Within the management of SAP Technology, monitoring is an essential task.

You can find more information about the underlying technology in the SAP Help Portal for SAP NetWeaver at <http://help.sap.com/netweaver> >> <your release> > [System Administration and Maintenance Information](#) > [Technical Operations for SAP NetWeaver](#) >.

8.1.1 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 Customer Activity Repository as quickly as possible.

Component-Specific Monitoring

i Note

Component-specific monitoring via CCMS is not supported for software component `RTL CAR 300`. Alternative monitoring possibilities are described below.

For software component `RTL DDF 300` which encompasses the Demand Data Foundation (DDF) and Unified Demand Forecast (UDF) modules, you can use the *SAP DMF* monitor set for *Computing Center Management System (CCMS)* monitoring.

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

Table 51: Services and Processes for CCMS Monitoring

Services	Monitoring Tree Elements (MTEs, nodes)
<i>Model by hierarchy</i>	DMF_MODEL_PROCESSES_BY_HIER
<i>Model by product location</i>	DMF_MODEL_PROCESSES_BY_PROD_LOC
<i>Forecast by hierarchy</i>	DMF_FORECAST_PROCESSES_BY_HIER
<i>Forecast by product location</i>	DMF_FORECAST_PROCESSES_BY_PROD_LOC

Services	Monitoring Tree Elements (MTEs, nodes)
<i>Calculate hierarchical priors</i>	DMF_CALCULATE_HIER_PRIORS

i Note




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




Monitoring of SAP HANA

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

SAP HANA Studio





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


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

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

SAP Solution Manager

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

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

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

Monitoring of SAP Customer Activity Repository

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

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

Monitoring of the SAP Landscape Transformation Replication Server

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

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

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

8.1.2 Data Consistency

SLT Replication

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

Caution

You can monitor the processes of the SAP Landscape Transformation (SLT) Replication server using the *Configuration and Monitoring Dashboard*, as specified in the [Alert Monitoring \[page 190\]](#) section. However, the dashboard does not currently provide an automated way to monitor the consistency of replicated tables. When performing SLT replication, you must verify that all the tables required for your SAP Customer Activity Repository implementation, as well as their contents, are being replicated.

For more general information about deployment options and data replication into SAP Customer Activity Repository, see the *Common Installation Guide* for your release at <https://help.sap.com/viewer/p/CARAB>
▶ *Installation and Upgrade* ▶

Master Data Checking

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

The master data checks are processed in the following situations:

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

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

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

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

ABAP Shared Memory Objects

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

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

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

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

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

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

Table 52:

Shared Memory Object Area	Description
<ul style="list-style-type: none"> • /POSDW/CL_MATERIAL_BUFFER_AREA • /POSDW/CL_MARM_BUFFER_AREA • /POSDW/CL_MEAN_BUFFER_AREA 	<p>The POS Data Management component of SAP Customer Activity Repository includes functionality to verify master data in the transactions received from the point-of-sale. Master data checks for Material, Unit of Measure, and International Article Number (EAN) retrieve master data from database tables through SAP HANA views. The listed shared memory object allow faster access to this data.</p>
<ul style="list-style-type: none"> • /POSDW/CL_POSCTRL_BUFFER_AREA 	<p>Implementation /POSDW/ANALYTIC_DIST_ENH_IMP of <i>BAdI: POS Transaction Data Distribution to Item Level</i> distributes discount amounts from the transaction header to the transaction line items. This BAdI implementation uses the listed shared memory object to speed up access to SAP HANA view <code>sap.is.retail.ecc.ARTICLEPOSCTRL</code>, which contains information on whether an article is discountable or not.</p>

Additional general information about ABAP shared memory objects can be found in the SAP NetWeaver application help at http://help.sap.com/saphelp_nw70/helpdata/en/df/109b8b4b073b4c82da0f2296c3a974/frameset.htm.

Shared Memory Object Size

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

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

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

Troubleshooting Shared Memory Object Issues

- **Shared Memory Object Sizing Issues**
 Typically, a runtime error caused by a Runtime errors that are related to the use of shared memory objects that can occur are as follows: `CX_SHM_OUT_OF_MEMORY` exception, indicates that an insufficient amount of memory is allocated to shared memory.

If your SAP Customer Activity Repository application is terminated as a result of a `CX_SHM_OUT_OF_MEMORY` exception, verify the *Runtime Error Long Text* provided with the runtime error (this can also be accessed using transaction `ST22`). The long text provides the size of the objects that the application was attempting to load into one of the `/POSDW/CL_*_BUFFER_AREA` shared memory objects. You should increase the size of shared memory, as described in the previous subsection, by at least this amount, plus an additional 10-20% buffer required for administrative activities.

For example, `abap/shared_objects_size_MB` is currently set to 300 MB. Your SAP Customer Activity Repository application produces a runtime error, indicating that 500 MB fails to load into the `/POSDW/CL_MATERIAL_BUFFER_AREA`. You should increase the size of `abap/shared_objects_size_MB` from 300 MB to 850-900 MB and restart the system.

- **Shared Memory Area Initialization Delays**

When SAP Customer Activity Repository performs master data checks to verify material, unit of measure, and International Article Number (EAN) data, the system verifies the data included in the received POS transactions against the data buffered in the shared memory objects (`/POSDW/CL_MATERIAL_BUFFER_AREA`). Runtime errors that are related to the use of shared memory objects that can occur are as, `/POSDW/CL_MARM_BUFFER_AREA`, `/POSDW/CL_MEAN_BUFFER_AREA`). If the master data check occurs prior to the initialization of the shared memory area, this can result in a runtime error caused by a `CX_SHM_NO_ACTIVE_VERSION` exception.

The time required to initialize the shared memory area (that is, the time required to load master data from the database tables into the dedicated shared memory objects) is controlled by the `SHM_MAXIMUM_PRELOAD_WAIT_TIME` component of the `SETTINGS` parameter used by the `CALL` method of `BAdI /POSDW/SETTINGS`. By default, `SHM_MAXIMUM_PRELOAD_WAIT_TIME` is set to 10 seconds. If you are experiencing runtime errors caused by a `CX_SHM_NO_ACTIVE_VERSION` exception, you may need to increase the value of `SHM_MAXIMUM_PRELOAD_WAIT_TIME` to allow for a longer period to initialize the shared memory area.

For more information, see SAP Note [1965920](#).

Staging Tables

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

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

Authorization Checks

The system performs authorization checks on the following function groups:

- `/DMF/BI_SALES_INBOUND` (*Inbound RFC for BI Sales Data*)
- `/DMF/MDIF_IMAGE_DATA` (*DMF Inbound RFC Image Data*)
- `/DMF/MDIF_LANE` (*DMF Inbound RFC Lane Data*)
- `/DMF/MDIF_LOCATION` (*DMF Inbound RFC Location*)

- /DMF/MDIF_LOC_HIER (*DMF Inbound RFC Location Hierarchy*)
- /DMF/MDIF_PRODUCT (*DMF Inbound RFC Product*)
- /DMF/MDIF_PROD_HIER (*DMF Inbound RFC Product Hierarchy*)
- /DMF/MDIF_PROD_LOC (*DMF Inbound RFC Product Location*)
- /DMF/OPIF_INVENTORY (*Inbound Staging Modules for Inventory*)
- /DMF/TS_GENERIC_INBOUND (*Inbound RFC for Generic Time Series*)
- /DMF/DISTRIBUTION_CURVE (*Distribution Curve Function Group*)

Data Validation for Modeling and Forecasting

You can run a data validation report prior to performing demand modeling and forecasting with the Unified Demand Forecast (UDF) module in SAP Customer Activity Repository. This allows you to identify potential issues in your input data early on and rectify them as needed. For more information about this report, see SAP Note [2161484](#).

8.1.3 Detailed Monitoring and Tools for Problem and Performance Analysis

Use

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

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

POS Data Management Application Log

The POS Data Management Application Log collects messages, exceptions, and errors, and displays them in a log.

This log provides you with basic header information, a message long text, detailed information, and technical information. For more information, see SAP Help Portal for SAP NetWeaver at https://help.sap.com/viewer/p/SAP_NETWEAVER >> [<Version>](#) > [Application Help](#) > [SAP NetWeaver Library: Function-Oriented View](#) > [Application Server](#) > [Application Server ABAP](#) > [Other Services](#) > [Services for Business Users](#) > [Application Log - User Guidelines \(BC-SRV-BAL\)](#).

POS Data Management Message Log

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

Auditor Report

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

Trace and Log Files

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

Table 53: Important Log and Trace Files of POS Data Management (RTL CAR) Component

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

Table 54: Important Log and Trace Files of SAP Customer Activity Repository (RTL CAR) Component

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

For more information, see https://help.sap.com/viewer/p/SAP_NETWEAVER >> <Version> > Application Help > SAP NetWeaver Library: Function-Oriented View > Application Server > Application Server ABAP > Other Services > Services for Business Users > Application Log - User Guidelines (BC-SRV-BAL) >.

Archiving

Archiving of Data Used by SAP Customer Activity Repository

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

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

For more information on deployment options for SAP Customer Activity Repository, see the *Common Installation Guide* (for new installations) or the *Common Upgrade Guide* (for upgrade scenarios). You can find both guides on SAP Help Portal under <https://help.sap.com/viewer/p/CARAB> > <Version> > *Installation and Upgrade* >.

Data Growth and Data Archiving Monitors

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

Table 55:

Technical Name of Table	Description
/POSDW/TLOGF	Transaction Log Flat table
/POSDW/TLOGF_EXT	Transaction Log Extensions table
/POSDW/TLOGF_X	Transaction Log Optimized Extensions table
/POSDW/TIBQ	Inbound Queue for POS Transactions
/POSDW/TIBQ_ADM	Management Records of Inbound Queue for POS Transactions
/POSDW/SOBJL	Source Object Link for POS Transactions
/POSDW/PLOG1S	Processing Log for Small Logs
/POSDW/TSTAT	Areas of Task Status
/POSDW/NAVIX	Navigation Index for Store and Day
/POSDW/AGGR	POS Aggregate

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

1. Log on to SAP HANA studio.
2. Locate the name of your system in the *Navigator* pane.
3. Right-click on your system name and select *Administration* from the context menu.
4. Select the *System Information* tab.
5. Select the *Size of tables on disk* entry.

The tables are displayed with their corresponding disk usage values.

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

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

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

For more information about the standard archiving tools, see the SAP Help Portal for SAP NetWeaver at https://help.sap.com/viewer/p/SAP_NETWEAVER | [<Version>](#) > [Application Help](#) > [SAP NetWeaver Library: Function-Oriented View](#) > [Solution Lifecycle Management](#) > [Data Archiving](#) > [Data Archiving in the ABAP Application System](#) > [Data Archiving with Archive Development Kit \(ADK\)](#) > [Archive Administration](#) .

Data Load After a Reboot

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

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

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

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

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

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

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

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

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

More Information

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

Table 56:

Reference	Path	Important Sections or Topics (If Applicable)
Technical Operations for SAP NetWeaver	For more information about the standard archiving tools, see SAP Help Portal for SAP NetWeaver at https://help.sap.com/viewer/p/SAP_NETWEAVER > <Version> > <i>Operations</i> > <i>Technical Operations for SAP NetWeaver</i> > <i>Administration of Application Server ABAP</i> > <i>Monitoring and Administration Tools for Application Server ABAP</i> >.	<ul style="list-style-type: none"> • Statistics, Displaying and Controlling Work Processes (SM50) • System Log (SM21) • ABAP Dump Analysis
SLT System Administration and Maintenance Information	See SAP Help Portal for SAP HANA Platform at https://help.sap.com/viewer/p/SAP_HANA_PLATFORM > <Version> > <i>Security</i> > <i>SAP HANA Security Guide</i> > <i>Security for SAP HANA Replication Technologies</i> > <i>Trigger-Based Data Replication Using SAP LT (Landscape Transformation) Replication Server (SLT)</i> >.	Changing Load and Replication Procedures
SAP HANA Administration Guide	See SAP Help Portal for SAP HANA Platform at https://help.sap.com/viewer/p/SAP_HANA_PLATFORM > <Version> > <i>Administration</i> > <i>SAP HANA Administration Guide</i> >.	Monitoring SAP HANA Systems

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

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









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

Trace and Log Files

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

Table 57:

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

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

Cleanup of growing data

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

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

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

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

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

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

Data Growth and Archiving the Monitor Results

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

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

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

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

8.1.5 Detailed Monitoring and Analysis Tools Specific to Demand Data Foundation

Preparing Exception Handling

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

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

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

i Note

There are subobjects that do not use the exception handling framework. For a list of those objects and more information on how you can monitor them, see the *Analyzing Application Logs* section below.

Configuring Exceptions

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

For more information, see the following:

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

High Level Exceptions

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

You can do the following:

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

Low Level Exceptions

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

Customer-Specific Replacement Messages

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

Customizable Message Statuses

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

Monitoring Exceptions

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

You can do the following:

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

More Information

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

Purging Obsolete Exceptions

Depending on your scenario, you might have large numbers of exceptions occurring during system operation. We recommend that you regularly purge (delete) the obsolete exceptions from the database. To do this, you can use the *Purging Exceptions from the Database* report (/DMF/PURGE_EWB_MESSAGES).

For more information, see SAP Help Portal at <http://help.sap.com/viewer/p/CARAB> > <your release> > **Application Help** > **Demand Data Foundation** > **General Services** > **Exception Management** > **Monitor Exceptions**.

Analyzing Application Logs

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

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

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

Procedure

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

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

i Note

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

Workload Monitoring

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

Managing Inbound Processing for Demand Data Foundation

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

1. You send the data from the external system to DDF using a Remote Function Call (RFC) or enterprise services, for example. You can do either an initial load and or a delta load, which transfers only the changed object instances.
2. The import data is stored in the staging tables in DDF. Note that no business validations are performed at this step.
3. The data is transferred from the staging tables to the production tables. Business validations are performed. Once the data is available in the production tables, it can be used for follow-on processes (such as demand modeling and forecasting with the Unified Demand Forecast module).

Different services help you manage the inbound processing:

- The *Monitor Imports* service (see <http://help.sap.com/viewer/p/CARAB> > <your release> > *Application Help* > *SAP Customer Activity Repository* > *Demand Data Foundation* > *General Services* > *Monitor Imports* >)
- The *Process Inbound Staging Tables* service (/DMF/PROCESS_STAGING_TABLES report, see <http://help.sap.com/viewer/p/CARAB> > <your release> > *Application Help* > *SAP Customer Activity Repository* > *Demand Data Foundation* > *General Services* > *Monitor Imports* > *Process Inbound Staging Tables* >)

Additional Options

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

- You can choose to skip Step 1 above and bypass the staging tables. The imported data is then saved directly in the production tables. For more information, see Customizing (transaction **SPRO**) under > *Cross-Application Components* > *Demand Data Foundation* > *Basic Settings* > *Integration* > *Define Import Settings* > . Here you can define for each type of master data and transactional data whether you want to bypass the staging tables or not (default setting).
- If the processing of transportation lane, product location, or sales data from the staging tables to the production tables takes more time than expected, you can use the /DMF/SET_STAGING_CONFIG_TABLE report to activate an alternative packaging. For more information, see the report documentation (transaction **SE38**) and SAP Note [2019909](#) > .
- You can schedule the *Process Inbound Staging Tables* service as a batch job to move the data from the staging tables.

- You can move the data manually from the staging tables. The [Monitor Imports](#) [Manual Processing](#) option is available for this.

More Information

<http://help.sap.com/viewer/p/CARAB> [<your release>](#) [Application Help](#) [SAP Customer Activity Repository](#) [Demand Data Foundation](#) [Integration Information](#) and [Inbound Processing](#)

8.1.6 Detailed Monitoring and Analysis Tools Specific to Omnichannel Promotion Pricing

Monitoring the Log Information of Transformations

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

Table 58:

Object	Sub-Object	Description
/ROP/APPL	/ROP/BO	Omnichannel promotion pricing application

For more information, see the Application Help for SAP NetWeaver on SAP Help Portal at https://help.sap.com/viewer/p/SAP_NETWEAVER [<Verison 7.4>](#) [SAP NetWeaver Library: Function-Oriented View](#) [Application Server](#) [Application Server ABAP](#) [Other Services](#) [Services for Application Developers](#) [Application Log \(BV-SRV-BAL\)](#) [Application Log- User Guidelines \(BV-SRV-BAL\)](#).

Monitoring the Outbound Processing of Regular Prices and OPP Promotions

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

Table 59:

Transaction Code	Transaction Title	Description
DRFLOG	Analyze Log for Outbound Implementations	<p>Use this transaction to analyze the Data Replication Framework (DRF) outbound processing. You can choose the following filter criteria:</p> <ul style="list-style-type: none"> The replication model that you have created for the replication of regular prices and OPP promotions. For more information, see the application help for omnichannel promotion pricing on SAP Help Portal at https://help.sap.com/viewer/p/CARAB under >> <Version> > <i>Application Help</i> > <i>SAP Customer Activity Repository</i> > <i>Omnichannel Promotion Pricing</i> > <i>Outbound Processing of Regular Prices and OPP Promotions</i> >. CROP_PRICE as the outbound implementation to monitor the outbound processing of regular prices. ROP_PROMO as the outbound implementation to monitor the promotion-centric outbound processing of OPP promotions. ROP_PRO_ST as the outbound implementation to monitor the location-specific outbound processing of OPP promotions.
WE05	IDoc List	<p>Use this transaction, if the content of the sent IDocs is of primary interest. You can choose the filter settings according to your Application Link Enabling (ALE) Customizing.</p> <p>The replication model that you have created for the replication of regular prices and OPP promotions. For more information, see the application help for omnichannel promotion pricing on SAP Help Portal at https://help.sap.com/viewer/p/CARAB under >> <Version> > <i>Application Help</i> > <i>SAP Customer Activity Repository</i> > <i>Omnichannel Promotion Pricing</i> > <i>Outbound Processing of Regular Prices and OPP Promotions</i> >.</p>






Monitoring XSA Log Information of the Promotion Pricing Service

The promotion pricing service underlies the log and trace standards of the XSA platform. In the first step, there is no configuration necessary. The standard logging level is ERROR.

For more information about the XSA log and trace standards, see the *SAP HANA Developer Guide For SAP HANA XS Advanced Model* on SAP Help Portal at https://help.sap.com/viewer/p/SAP_HANA_PLATFORM >> <Version> > Development > *SAP HANA Developer Guide* >.

The following table shows the essential XS commands that you need to handle and display logs of the web application:

Table 60:

Command	Description
 Source Code <pre>xs set-logging-level ppservice- webapp-central com.sap.ppengine DEBUG</pre>	Use this command to raise the log level for the components of the promotion pricing service to <code>DEBUG</code> .
 Source Code <pre>xs list-logging-levels ppservice- webapp-central</pre>	Use this command to see the logging level information.
 Source Code <pre>xs logs ppservice-webapp-central</pre>	Use this command to attach to the log via tail.
 Source Code <pre>xs logs ppservice-webapp-central -- all</pre>	Use this command to dump the complete log.
 Source Code <pre>xs logs ppservice-webapp-central -- recent</pre>	Use this command to dump the recent log entries.

The same commands can be used for the `ppservice-approuter` application.

For more information, see *SAP HANA Developer Guide For SAP HANA XS Advanced Model* on SAP Help Portal at https://help.sap.com/viewer/p/SAP_HANA_PLATFORM >> <Version> > Development > *SAP HANA Developer Guide* > sections:

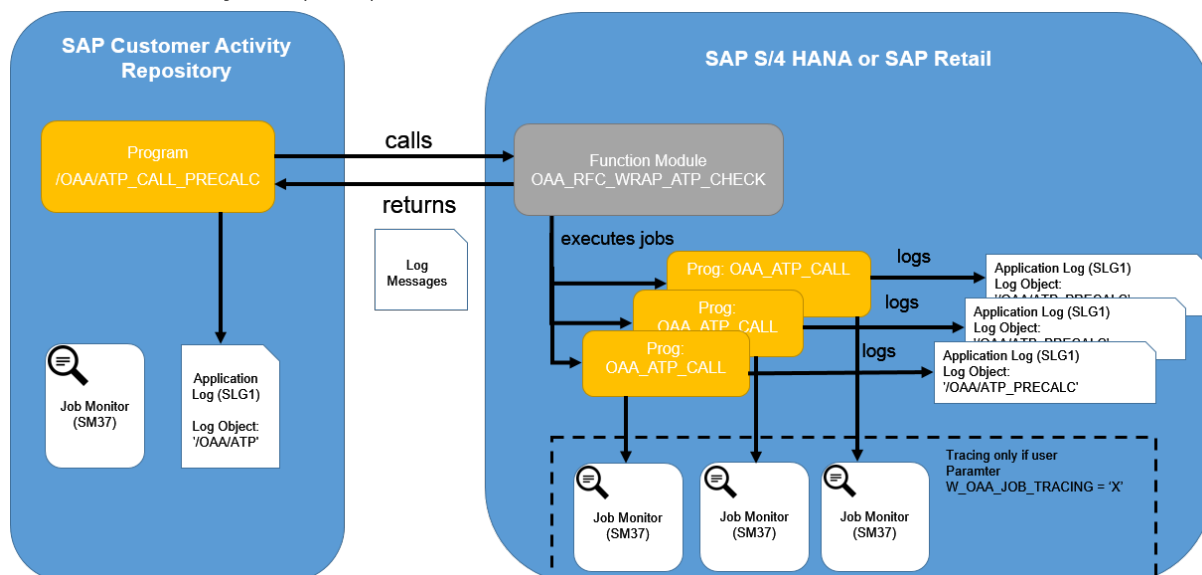
- [The XS Command- Line Interface Reference](#)
- [Working with the XS Advanced Command- Line Client](#)

8.1.7 Detailed Monitoring and Analysis Tools Specific to Omnichannel Article Availability and Sourcing

SAP Customer Activity Repository and SAP S/4HANA or SAP Retail

- The parallelized ATP run (report `/OAA/ATP_CALL_PRECALC` or `/OAA/ATP_SNP_CALC` respectively) that is triggered in SAP Customer Activity Repository and executed in SAP S/4HANA or SAP Retail follows standard ABAP job monitoring (transaction **SM37**) and uses the standard application log (transaction **SLG1**)
 - Application log object in SAP Customer Activity Repository: `/OAA/ATP`, no subobjects
 - Application log object in SAP S/4HANA or SAP Retail: `/OAA/ATP_PRECALC`, no subobjects

To activate the traceability of the parallelized ATP run, you need to activate user parameter `W_OAA_JOB_TRACING` (transaction **SU3**) in SAP S/4HANA or SAP Retail for the technical user entered in the RFC destination in SAP Customer Activity Repository for the SAP S/4HANA or SAP Retail destination. This allows you to trace the result of the parallelized ATP run during the implementation phase in the job monitor log of SAP S/4HANA or SAP Retail (transaction **SM37**). In the productive system, activate this user parameter in case of errors only, to improve performance.



- Sales channel mode only: **Parallel execution of sourcing strategies** uses the standard application log (transaction **SLG1**) in SAP Customer Activity Repository. It can be monitored via application log object `/OAA/SRC` (no subobjects). A warning is issued when the number of available work processes is not sufficient for the parallel execution of sourcing strategies.
- With all reports in SAP Customer Activity Repository and SAP S/4HANA or SAP Retail, errors are logged with the reports.
- There is no application monitoring.
- With REST services in SAP Customer Activity Repository, there is no logging; errors are returned to the caller (that is, the online store software application). There is no application monitoring for the REST services.

SAP Hybris Commerce

OAA functionality in SAP Hybris Commerce uses standard monitoring and logging for both applications and Data Hub. For more information about the Hybris Administration Console, see <https://help.hybris.com/6.5.0/hcd/d0278430780b45208f8c5f2aa5e064a8.html>. The logger package is `com.sap.retail.oaa.commerce.services`.

8.2 Management

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

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

8.2.1 Starting and Stopping

Start and Stop Sequences and Tools

Table 61:

Software Component	Sequence	Tool	Detailed Description
SAP HANA Database	1	sapstartsrv	See the information about starting and stopping SAP HANA systems in the <i>SAP HANA Administration Guide</i> .
RTL CAR 300	2	STARTSAP	Log on to the host of your central system as the SAP Administrator. Enter startsap ALL to start the SAP NetWeaver database, ABAP instances, and all other processes.

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

Software Component	Sequence	Tool	Detailed Description
SAP LT Replication Service (Optional)	4	SAP HANA Studio	Use SAP HANA Studio to stop replication of tables required by SAP Customer Activity Repository. For more information, see SAP Help Portal at http://help.sap.com/hana ► SAP HANA Options ► SAP HANA Real-Time Replication ► SAP HANA Trigger-Based Data Replication Using SAP LT Replication Server ► System Administration and Maintenance Information ►
RTL CAR 300	5	STOPSAP	Log onto the host of your central system as the SAP Administrator. Enter stopsap R3 . Note that the R3 switch does not stop the database simultaneously. To do so, use the command stopsap or stopsap ALL .
SAP HANA Database	6	sapstartsrv	See the information about starting and stopping SAP HANA systems in the <i>SAP HANA Administration Guide</i> .

8.2.2 Software Configuration

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

Table 62:

Software Component	Configuration Tool(s)	Detailed Description
RTL CAR 300	SAP Customizing (transaction SPRO)	See ► <i>Customizing for SAP Customer Activity Repository</i> ►

Software Component	Configuration Tool(s)	Detailed Description
RTLDDF 300		See ► Customizing for Cross-Application Components ► Demand Data Foundation ►.

8.2.3 Administration Tools

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

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

Periodic Scheduled Tasks

You can automate scheduled tasks using a task scheduler program.

Data Import

- To import master data and transactional data into the Demand Data Foundation (DDF) module, you can schedule automated import tasks using the /DMF/PROCESS_STAGING_TABLES report (transaction **SE38**). For more information, see <https://help.sap.com/viewer/p/CARAB> ► [<Version>](#) ► [Application Help](#) ► [SAP Customer Activity Repository](#) ► [Demand Data Foundation](#) ► [General Services](#) ► [Monitor Imports](#) ► [Process Inbound Staging Tables](#) ►.
- Make sure that the master data is continuously imported into DDF. If you use an SAP ERP application as your master data system, configure the DRF data replication framework (transaction **DRFOUT**) to periodically send the data. For more information see [Configuring Data Replication from SAP ERP to DDF \[page 150\]](#).

Data Export

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

Periodic Manual Tasks

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

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

➔ Recommendation

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

Table 63: Manual Tasks for Managing DDF

Task	Tool Supporting the Task	Recommended Frequency	Description
Purge master data	Report /DMF/PURGE_AGENT	As required	You can use this report to purge master data. For more information, see the report documentation.
Delete obsolete time series data	Report /DMF/TS_DELETE	As required	You can select the data to be deleted by product and by location using key figure parameters (<code>KPRM</code>). You can delete data for the following time series types: <ul style="list-style-type: none"> • Universal (UN) • Location Universal (UL) • Point of Sale (POS) For more information, see the report documentation.
Delete obsolete exception message data	Report /DMF/PURGE_EWB_MESSAGES	As required	You do not need to specify parameters for this report. You can either execute it directly or schedule it for execution. Which data is purged depends on how you have configured the exceptions in Customizing and on which deletions are performed on the user interface.

Table 64: Manual Tasks for Omnichannel Article Availability and Sourcing

Task	Tool Supporting the Task	Recommended Frequency	Description
Delete outdated ATP snapshot entries	Report /OAA/ ATP_SNAPSHOT_DELETION in SAP Customer Activity Repository	As required	<p>If articles are removed from the assortment of an online store, availability information for these articles persists in the ATP snapshot. The report removes these entries.</p> <p>For more information, see the detailed report documentation in the system.</p>
Delete outdated temporary reservations that have built up over time	Report /OAA/ ATP_RESV_DELETION in SAP Customer Activity Repository	As required	<p>As a default, temporary reservations are deleted automatically as soon as they become outdated (event-based deletion). However, in the case of error conditions, some outdated temporary reservations might not get deleted automatically and need to be removed manually from the database.</p> <p>There are two types of reservations: cart reservations and order reservations. You can delete all reservations or delete cart reservations only.</p> <p>For more information, see the detailed report documentation in the system.</p> <p>While it is possible to select both deletion options, best practice in business would be to create and schedule two independent variants, namely one per option. The variant for the <i>Delete all reservations</i> option could be scheduled to run every week, while the variant for the <i>Delete cart reservations only</i> option could be scheduled to run every 30 minutes, for example.</p>
Delete outdated entries in uploaded vendor stock information	Report OAA_VEND_STOCK_DELETION in SAP S/4HANA or SAP Retail	As required	<p>If article/vendor combinations are no longer valid for the assortment of an online store, availability information for these articles persists in the uploaded vendor stock information in SAP S/4HANA or SAP Retail. You use this report to remove these entries from the uploaded vendor stock information.</p> <p>For more information, see the detailed report documentation in the system.</p>

Task	Tool Supporting the Task	Recommended Frequency	Description
Clean up ATP delta tables	Report /OAA/ ATP_DELTA_CLEANER in SAP Customer Activity Repository	As required	The report is used to clean up two tables in SAP S/4HANA or SAP Retail that log stock-relevant changes to article/source combinations. Both tables contain more entries than needed, that is, they contain a number of entries that are not relevant for your online stores. These entries keep building up over time and should be deleted. For more information, see the detailed report documentation in the system.

Table 65: Manual Tasks for Omnichannel Promotion Pricing

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

8.2.4 Backup and Restore

Use

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

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

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

More Information

Table 66:

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

8.2.5 Load Balancing

For information about load balancing, see the following references:

Table 67:

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

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

8.3 High Availability

Use

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

More Information

Table 68:

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

8.4 Software Change Management

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

Use

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

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

Change and Transport Management

For transport and change management issues, the procedures of SAP NetWeaver apply. For more information, see the *Change and Transport System* section for your SAP NetWeaver Platform under https://help.sap.com/viewer/p/SAP_NETWEAVER ► *<your SAP NetWeaver Platform>* ► *Operations* ► *Technical Operations for SAP NetWeaver* ► *Administration of Application Server ABAP* ►.

Development Requests and Development Release Management

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

More Information

Table 69:

Information about...	Path
Change Management for SAP HANA-based systems	https://help.sap.com/viewer/p/SAP_HANA_PLATFORM ► <i><Version></i> ► <i>Installation and Upgrade</i> ► <i>SAP HANA Master Guide</i> ► <i>SAP HANA Implementation and Operation</i> ► <i>Operating SAP HANA</i> ► <i>SAP HANA Appliance</i> ► <i>Change Management</i> ►
Additional information on manual correction process for ABAP on SAP HANA	SAP Note 1798895 ➔.

Implementation of Support Packages and Patches

Support package stacks are sets of support packages and patches for the respective product version that must be used in the given combination. The technology for applying support packages and patches will not change.

➔ Tip

We highly recommend that you always implement *support package stacks* of SAP NetWeaver, SAP HANA Platform, and SAP Customer Activity Repository applications bundle.

Before applying any support packages or patches of the selected support package stack, consult the following guides for SAP Customer Activity Repository applications bundle under <https://help.sap.com/viewer/p/CARAB>

▶ <Version> ▶ *Installation and Upgrade* ▶:

- For new installations: *Common Installation Guide*
- For upgrade scenarios: *Common Upgrade Guide*

More Information

For more information about software change management, see the following:

Table 70:

Information about...	Path
Maintenance Planner	https://support.sap.com ▶ SAP Solution Manager ▶ SAP Solution Manager 7.2 ▶ Processes for 7.2 ▶ Processes ▶ Landscape Management ▶ Maintenance Planner ▶
Support Package Stacks	https://support.sap.com ▶ My Support ▶ Software Downloads ▶ Support Package Stacks ▶

8.5 Troubleshooting for SAP Customer Activity Repository Modules

Diagnose and resolve issues that may arise during the day-to-day running of your solution. Troubleshooting tips are provided for different modules in SAP Customer Activity Repository.

If you need to report a customer incident, see the [Support Desk Management \[page 232\]](#) section for more information.

8.5.1 Troubleshooting for Omnichannel Article Availability and Sourcing (OAA)

Table 71:

Symptom	Cause	Solution
In SAP Hybris Commerce, there is no availability information in the cart.	Availability data could not be retrieved from SAP Customer Activity Repository.	<p>Check whether the SAP Customer Activity Repository system is up and running.</p> <p>If the SAP Customer Activity Repository system is up and running:</p> <p>In SAP Hybris Commerce, check the log files. Requests and responses for the 3 OAA REST services are logged in the standard application log files of SAP Hybris Commerce. For error analysis, set the log4j log level for logger package <code>com.sap.retail.oaa.commerce.services</code> to <i>DEBUG</i> in the hybris administration console (hac), under Platform Logging. Repeat process and check log files again.</p>

Symptom	Cause	Solution																														
		<p>If there are errors in the log files: In SAP Hybris Commerce, check whether Backoffice Customizing is correct.</p> <p>If there are no errors in the log files: Check whether the OAA tables have been replicated from SAP S/4 HANA or SAP Retail to SAP Customer Activity Repository. See the following SAP Notes:</p> <ul style="list-style-type: none"> • SAP S/4HANA: SAP Note 2538187, for installations based on the SAP_S4H schema • SAP Retail: SAP Note 2538135, for installations based on the SAP_ECC schema <p>For OAA, the following tables must be replicated via SLT:</p> <ul style="list-style-type: none"> • Tables used directly by OAA: <p>Table 72:</p> <table border="1"> <thead> <tr> <th>Table</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>MARA</td> <td>Article master data</td> </tr> <tr> <td>MARM</td> <td>Article-related units of measure</td> </tr> <tr> <td>LFA1</td> <td>Vendor master data</td> </tr> <tr> <td>EINA</td> <td>Purchasing info records</td> </tr> <tr> <td>T001W</td> <td>Site master data</td> </tr> <tr> <td>VBAK</td> <td>Sales documents</td> </tr> <tr> <td>TTZCU*</td> <td>Time zones</td> </tr> <tr> <td>OAA_ATP_PROFIL E*</td> <td>ATP parallelization profiles</td> </tr> <tr> <td>VBAP</td> <td>Details of sales document items</td> </tr> <tr> <td>VBUP</td> <td>Statuses of sales document items</td> </tr> <tr> <td>GEOLOC*</td> <td>Geocoordinates of data sources</td> </tr> <tr> <td>ADRC</td> <td>Address data</td> </tr> <tr> <td>BUT000*</td> <td>General data of business partners</td> </tr> <tr> <td>BUT021_FS*</td> <td>Addresses of business partners</td> </tr> </tbody> </table>	Table	Description	MARA	Article master data	MARM	Article-related units of measure	LFA1	Vendor master data	EINA	Purchasing info records	T001W	Site master data	VBAK	Sales documents	TTZCU*	Time zones	OAA_ATP_PROFIL E*	ATP parallelization profiles	VBAP	Details of sales document items	VBUP	Statuses of sales document items	GEOLOC*	Geocoordinates of data sources	ADRC	Address data	BUT000*	General data of business partners	BUT021_FS*	Addresses of business partners
Table	Description																															
MARA	Article master data																															
MARM	Article-related units of measure																															
LFA1	Vendor master data																															
EINA	Purchasing info records																															
T001W	Site master data																															
VBAK	Sales documents																															
TTZCU*	Time zones																															
OAA_ATP_PROFIL E*	ATP parallelization profiles																															
VBAP	Details of sales document items																															
VBUP	Statuses of sales document items																															
GEOLOC*	Geocoordinates of data sources																															
ADRC	Address data																															
BUT000*	General data of business partners																															
BUT021_FS*	Addresses of business partners																															

Symptom	Cause	Solution								
		<table border="1"> <thead> <tr> <th>Table</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>CVI_CUST_LINK</td> <td>Mapping of customers and business partners</td> </tr> <tr> <td>CVI_VEND_LINK</td> <td>Mapping of vendors and business partners</td> </tr> <tr> <td>TVSBT*</td> <td>Names of shipping conditions</td> </tr> </tbody> </table> <p>i Note</p> <p>The tables marked with an asterisk (*) are exclusively used by OAA. All other tables are part of the standard SLT replication scope for SAP Customer Activity Repository.</p> <ul style="list-style-type: none"> Tables required for Inventory Visibility view InventoryVisibilityWithSalesOrderReservedQuantity, such as MARD and VBFA <p>If SLT replication is okay: In SAP Customer Activity Repository, check the ATP snapshot (transaction SE11, table /OAA/ATP_SNP_HDR and /OAA/ATP_SNP_ITM, external view /OAA/STORE_AVAIL).</p> <p>If these tables and this view are empty: In SAP Customer Activity Repository, check whether the following report was scheduled (transaction SM37) and was executed successfully (transaction SLG1, object /OAA/ATP):</p> <ul style="list-style-type: none"> Sales channel mode: /OAA/ATP_SNP_CALC OAA profile mode: /OAA/ATP_CALL_PRECALC or report /OAA/ATP_VENDOR_CALC <p>If the report was executed successfully: In SAP S/4 HANA or SAP Retail, check scheduled jobs (transaction SM37; see prefix for jobs set in ATP profile in Customizing activity <i>Define ATP Parallelization Profiles for DC Articles</i>).</p>	Table	Description	CVI_CUST_LINK	Mapping of customers and business partners	CVI_VEND_LINK	Mapping of vendors and business partners	TVSBT*	Names of shipping conditions
Table	Description									
CVI_CUST_LINK	Mapping of customers and business partners									
CVI_VEND_LINK	Mapping of vendors and business partners									
TVSBT*	Names of shipping conditions									
In SAP Hybris Commerce, rough stock indicators (RSI) are not updated.	RSI data has not reached the Solr index in SAP Hybris Commerce.	<p>In SAP Customer Activity Repository, check whether the RSI IDoc was sent:</p> <ul style="list-style-type: none"> Sales channel mode: transaction SM37: job monitor of report /OAA/ATP_RSI_GENERATION_SC. OAA profile mode: transaction SM37: job monitor of report /OAA/ATP_RSI_GENERATION. 								

Symptom	Cause	Solution
		<p>If the IDoc was not sent: Check whether errors occurred during generation of the IDoc (transactions WE05, BD87). If the IDoc was sent: In the Backoffice application of SAP Hybris Commerce, check whether the rough stock indicators exist in the virtual warehouse that is to be the receiver of this information.</p> <p>If the rough stock indicators do not exist in the virtual warehouse, check the standard logging of the Hybris Data Hub. You can access the information contained in the Hybris Data Hub directly using the following standard browser GET requests:</p> <ul style="list-style-type: none"> • <code>http://localhost:8080/datahub-webapp/v1/pools/SAPOAARSI_INBOUND_POOL/items/RawCARRsi.xml</code> • <code>http://localhost:8080/datahub-webapp/v1/pools/SAPOAARSI_INBOUND_POOL/items/CanonicalStockLevel.xml</code> <p>If the rough stock indicators exist in the virtual warehouse, check whether the Solr index was updated correctly.</p>
In SAP Hybris Commerce, the error message <i>Failed to place the order</i> is displayed when you click <i>Place Order</i> in checkout.	Sourcing was called but might have failed.	Check the logs in SAP Hybris Commerce for error messages.
In SAP Customer Activity Repository, there is no F4 help available for ATP parallelization profiles in Customizing activity <i>Define OAA Profiles</i> .	Table OAA_ATP_PROFILE has not been replicated from SAP S/4HANA or SAP Retail.	Check SLT replication (see SAP Notes mentioned above).

8.5.2 Troubleshooting for On-Shelf Availability

Viewing Back-End Error Messages

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

1. Start transaction `/IWFND/ERROR_LOG`.
2. Select the log entry and choose *Error Context*.
3. Choose *Application Log*.

4. Note down the error number of each message with the following message text: `This is an external message. Access message text via details`
5. Choose *Detail exists* to view the text of each external error message.

Cleaning Up SAP Gateway Cache

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

Verifying BAdI Implementations

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

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

Table 73:

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

Troubleshooting On-Shelf Availability Algorithm Results

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




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

8.5.3 Troubleshooting for UDF Modeling and Forecasting

You may encounter issues when using the Unified Demand Forecast module and the *Analyze Forecast* app in SAP Customer Activity Repository. Use these troubleshooting tips to diagnose and resolve data issues, fix errors, or investigate unexpected forecast results, for example.

Table 74: Troubleshoot Modeling and Forecasting Issues

Area	Symptom	Cause	Possible Solutions
Customizing	<p>You cannot see the Customizing activities for Unified Demand Forecast (UDF) in the SAP Customizing Implementation Guide (transaction SPRO).</p> <p>Either the activities are not displayed at all or you see different activities. When you try to display the correct activities by activating business functions in the Switch Framework (transaction SFW5), you get an error.</p>	You might not have activated all required business functions for UDF.	<p>See section <i>Activate Business Functions for DDF and UDF</i> in the <i>Common Installation Guide</i> (for new installations) or the <i>Common Upgrade Guide</i> (for upgrade scenarios). You can find both guides under https://help.sap.com/viewer/p/CARAB > <Version> > Installation and Upgrade.</p>

Area	Symptom	Cause	Possible Solutions
Modeling and forecasting	You get the error <i>905 Structured Query Language (SQL) exception detected: &1&2&3&4</i> .	An SQL error must be fixed.	Use the system log (transaction SM21) to find the underlying SQL exception: <ul style="list-style-type: none"> To help find the correct log entries, specify the user and the approximate time frame. Look for entries with the same error as in this message. Note that the log may span several lines. This is indicated by a red priority icon and an initial ">". Attempt to determine the root cause and a corrective action based on the message texts of the applicable log entries.
Modeling and forecasting	You get the errors <i>901 Failed execution for &1 and 926 Failed decomposition</i> .	Possibly a data issue; no active product locations.	See the message long texts (transaction SE91).
Modeling and forecasting	You get the errors <i>901 Failed execution for &1 and 905 Structured Query Language (SQL) exception: &1&2&3&4</i> and <i>926 Failed decomposition</i> .	Most likely a SQL error must be fixed.	See the message long texts (transaction SE91).
Modeling and forecasting	You get the error <i>Could not execute 'call_SYS_AFL...</i> or the error <i>Repository: Internal error during statement execution....</i>	The privileges for calling application function libraries (AFLs) are not assigned correctly or are incomplete.	SAP Note 1846194 
Modeling and forecasting	You are experiencing different issues with UDF processes and analytics.	You might have data records with empty time granularity fields (TIME_GRAN="") in the UDF output tables.	SAP Note 2560853  (only relevant for upgrade scenarios; not relevant for new installations of the current release)
Offers	You want to forecast complex offers (such as <i>Buy X Get Y</i>).	You must set up a specific task decomposition to run production forecasts with the UDF module.	SAP Note 2176058 

Area	Symptom	Cause	Possible Solutions
Offers	You are performing what-if forecasts for offers in SAP Promotion Management. You get an offer forecast that is much higher than expected and want to investigate the causes.	Different causes are possible.	<p>You can analyze the forecast as follows:</p> <ol style="list-style-type: none"> 1. Check which products are assigned to the offer in the <i>Offer Financials</i> table (/DMF/OFR_FIN_DTL). 2. Determine the time period of the offer. 3. Determine the tactics of the offer. 4. Identify the critical products. This means, the products with the largest difference between the actual offer sales in the past and the forecasted offer sales in the future. 5. Open the <i>Schedule Model and Forecast</i> service. 6. Specify a <i>Diagnostic ID</i> and run a diagnostic forecast for the critical products. 7. Visualize the results in the <i>Analyze Forecast</i> SAP Fiori app. Check whether you can see what caused the critical forecasts. 8. Check the parameter estimates that were generated during modeling in the /DMF/UMD_PAR table. 9. Repeat as often as necessary to analyze different scenarios: <ol style="list-style-type: none"> 1. Run another diagnostic forecast, this time with a different configuration and under a new <i>Diagnostic ID</i>. 2. Again, check the results in the <i>Analyze Forecast</i> SAP Fiori app and see whether you can explain the critical forecasts.

Area	Symptom	Cause	Possible Solutions
Offers	Offers imported from ERP promotions are missing.	Different causes are possible.	<ul style="list-style-type: none"> • See the <i>Offer Master Data</i> section under https://help.sap.com/viewer/p/CARAB >> <Version> > Application Help > SAP Customer Activity Repository > Demand Data Foundation > Integration Information > Inbound Processing > Inbound Interfaces For Remote Function Call (RFC) Communication >. • For information about exporting ERP promotions to offers, see SAP Note 1830164.
Offers	You get an error saying that the offer is invalid or unsupported.	<p>Different causes are possible. The following conditions apply:</p> <ul style="list-style-type: none"> • There must be at least one buy term. • Multiple get terms are not supported, regardless of the operator. • Product quantities cannot be zero or less. • AND buy terms are not supported. • Multiple coupons at the offer level are not supported. • Coupons are not supported at the term level at all. • Duplicate product locations on the buy side are not supported. • Duplicate product locations on the get side are not supported. 	<ul style="list-style-type: none"> • You can identify invalid and unsupported offers as follows: Check table /DMF/UMD_TS, column /DMF/OFFER_LIFT_TYPE_CODE having a value equal to 98 (invalid) or 99 (unsupported). • Change the offer so that it complies with the conditions on the left.

Area	Symptom	Cause	Possible Solutions
Performance	You are experiencing performance issues in your SAP HANA database.	You need information on how to troubleshoot and resolve those issues and how to enhance performance in general.	See the <i>SAP HANA Troubleshooting and Performance Analysis Guide</i> for your SAP HANA Platform version at https://help.sap.com/viewer/p/SAP_HANA_PLATFORM ▶ <Version> Administration ▶
Performance	You get a runtime error or exit message and need information about possible causes and solutions.	Different causes are possible.	Use the ABAP dump analysis (transaction ST22) to search for short dumps and call up detailed error information.
Remote Function Calls (RFCs), function modules	You are experiencing workflow issues when executing an RFC function module (such as <code>/DMF/UFC_RETRIEVE_RESULTS_FR</code>).	Different causes are possible.	SAP Note 1098805 (detailed troubleshooting information for different causes, tips & tricks)
SAP Fiori	You cannot open the <i>Analyze Forecast</i> app in your SAP Fiori launchpad.	The back-end reuse library might not be loading correctly.	You can do the following in the back-end system: <ol style="list-style-type: none"> In transaction SICF, search for the <code>/sap/bc/ui5_ui5/sap/ddfreuse_v2</code> service and check that it is active. If the service is active, reset the SAP Fiori cache: In transaction SE38, execute the following reports: <code>/UI5/APP_INDEX_CALCULATE</code> and <code>/UI2/INVALIDATE_GLOBAL_CACHES</code> and <code>/UI2/INVALIDATE_CLIENT_CACHES</code>. Clear your browser cache and check whether you can now open the app.

Area	Symptom	Cause	Possible Solutions
SAP Fiori	You are using the <i>Analyze Forecast</i> SAP Fiori app and want to use the <i>Product Hierarchy</i> filter. However, no hierarchies are displayed.	No product hierarchies are assigned to your ABAP back-end user in the <i>Maintain Area of Responsibility</i> Web Dynpro service. The app only displays product hierarchies assigned to you.	Verify the product hierarchy assignments in your area of responsibility (AOR). For more information, see the <i>Maintain Area of Responsibility</i> section under https://help.sap.com/viewer/p/CARAB ▶ <Version> ▶ <i>Application Help</i> ▶ <i>SAP Customer Activity Repository</i> ▶ <i>Demand Data Foundation</i> ▶ <i>General Services</i> ▶ <i>Maintenance Services</i> ▶.

i Note

Additional troubleshooting information is available for installation, upgrade, and implementation issues. For more information, see the *Troubleshooting* section of the *Common Installation Guide* (for new installations) or the *Common Upgrade Guide* (for upgrade scenarios). You can find both guides on SAP Help Portal under <https://help.sap.com/viewer/p/CARAB> ▶ <Version> ▶ *Installation and Upgrade* ▶.

8.6 Support Desk Management

Use

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

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

Remote Support Setup

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

The following roles should be assigned to this user:

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

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

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

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

Reporting Customer Incidents

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

- CA-RT-CAR-PIP - to report an incident for the POS Data Transfer and Audit module (POS Data Management).
- CA-DDF-RT - to report an incident for the Demand Data Foundation (DDF) module.
- CA-DDF-RT-UDF - to report an incident for the Unified Demand Forecast (UDF) module. This includes messages relating to the *Analyze Forecast* SAP Fiori app.
- CA-RT-CAR-INT - to report an incident for integration with the DDF/UDF modules and integration between the repository and consuming applications.
- CA-RT-CAR-ANA - to report an incident for SAP HANA content delivered with SAP Customer Activity Repository.
- CA-RT-CAR-OAA - to report an incident for Omnichannel Article Availability and Sourcing that is related to SAP Customer Activity Repository.
LO-MD-PL and LO-MD-OAA - to report an incident for Omnichannel Article Availability and Sourcing that is related to SAP S/4HANA or SAP Retail.
CEC-COM-BSC-OAA - to report an incident for Omnichannel Article Availability and Sourcing that is related to OAA standard extensions and OAA Data Hub extensions of SAP Hybris Commerce, integration package for SAP for Retail.
- CA-DDF-RT-PPR - to report an incident for omnichannel promotion pricing (OPP) that is related to the price and promotion repository.
- CA-DDF-RT-PPS - to report an incident for omnichannel promotion pricing (OPP) that is related to the promotion pricing service.
- CA-RT-CAR - to report an incident for general issues with SAP Customer Activity Repository that cannot be easily classified into one of the categories above.

More Information

- For more information about reporting incidents for this release, see the SAP Support Portal at <https://support.sap.com> ► [Download Software](#) ► [By Alphabetical Index \(A-Z\)](#) ► [C](#) ► [CAR RETAIL APPLICATIONS BUNDLE](#) ► [CAR RETAIL APPL BUNDLE 2.0](#) ► [Info](#) ►.
- If the incident relates to a SAP HANA component, see SAP Note [1976729](#) for a complete component list.
- For more information about reporting incidents, see the SAP Support Portal at <https://support.sap.com> ► [My Support](#) ► [Incidents](#) ►.
- For contact information for your local customer interaction center, see SAP Note [560499](#).

8.7 Enterprise Services

SAP Customer Activity Repository can make use of web services to receive and send data for different scenarios.

Use

You can use the web services for the following scenarios:

- Receive point-of-sale (POS) transactions from connected POS systems into SAP Customer Activity Repository (*Create Point Of Sale Transaction as Bulk*).
- Send POS transaction data from SAP Customer Activity Repository to SAP CRM (*Request Loyalty Membership Activity Journal as Bulk*).
- Receive master data and historical transaction data into the Demand Data Foundation (DDF) module in SAP Customer Activity Repository, to support modeling and forecasting scenarios.

Activities

You can find the web services in your SAP Customer Activity Repository system using transaction **SOAMANAGER**. In the *SOA Management* tool, select the *Service Administration* tab followed by *Web Service Configuration*. Once in *Web Service Configuration*, search for the required service.

Example

To find the *Create Point Of Sale Transaction as Bulk* service, specify the following search criteria:

- *Object Type*: *Service Definition*
- *Object Name*: `PointOfSaleTransactionERPBulkCreateRequest_In`

To find the *Request Loyalty Membership Activity Journal as Bulk* service, specify the following search criteria:

- *Object Type*: *Consumer Proxy*
- *Object Name*: `LoyaltyMembershipActivityJournalCRMBulkRequest_Out_V1`

Note

If you cannot find a particular service in the *SOA Management* tool, see SAP Note [1884049](#)  for a possible solution.

For detailed service descriptions, see the following sections.

8.7.1 Ad Content Processing

Definition

Manages the content of an advertisement, such as an advertisement graphic or a printed ad.

Technical Data

Table 75:

Entity Type	Process Component
Software Component Version	ESM TDM 1.2
Technical Name	AdContentProcessing
Namespace	http://sap.com/xi/ESM/ERP

Business Context and Use

The *Ad Content Processing* process component provides low resolution images that represent consumer products included in the retailers' merchandise assortment. This allows marketing specialists to create and revise the visual layout of promotional offers.

8.7.1.1 Advertisement Graphic

Definition

A graphic that appears in an advertisement.

Technical Data

Table 76:

Entity Type	Business Object
Software Component Version	ESM TDM 1.2

Technical Name	AdContentProcessing
Object Category	Business Process Object

Business Context and Use

The *Advertisement Graphic* business object is used by marketing specialists to create and revise the visual layout of promotional offers. Advertisement graphics are low resolution images that represent consumer products included in the merchandise assortment of a retailer. The transport of the images and layouts allows desktop publishing teams to complete the construction of printed promotional materials.

Low resolution images contain a relationship to existing products in the material master data.

8.7.1.1.1 Advertisement Graphic Replication In

Definition

An interface to receive the advertisement graphic data.

Technical Data

Table 77:

Entity Type	Service Interface
Category	Third-Party A2A
Direction	Inbound

Business Context and Use

The *Advertisement Graphic Replication In* contains an operation that receives image information.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation

steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.

- You have ensured that the logical system has been defined in Customizing under [Cross-Application Components](#) > [Demand Data Foundation](#) > [Basic Settings](#) > [Define Logical Systems](#) . For more information, see the Customizing activity documentation (transaction **SPRO**).
- DDF receives the data through an eXtensible Markup Language (XML) message. The data is saved in DDF. For more information, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB> [<Version>](#) > [Application Help](#) > [SAP Customer Activity Repository](#) > [Demand Data Foundation](#) > [Integration Information](#) > [Inbound Processing](#) .
- DDF allows customers to import and actually delete low resolution images from the system and from the MIME repository where images are stored. Various image formats are supported, such as `.jpg`, `.gif`, and `.bmp`. Along with the image or the URL, various image attributes are required to allow DDF to create advertising content and advertisement layouts. These attributes represent the promotional advertisement, which is then used as an export to their appropriate desktop publishing software.
- The [Advertisement Graphic Replication In](#) interface is designed to carry the actual images in binary format along with the metadata for these images. The binary format images are stored in the MIME repository on the SAP application server for DDF. The metadata of the images is loaded into the DDF.

8.7.1.1.1 Replicate Advertisement Graphic as Bulk

Definition

To replicate the advertisement graphics.

Technical Data

Table 78:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released
Technical Name	AdvertisementGraphicReplicationBulkRequest_In
Namespace	http://sap.com/xi/RTLDME/Global2
Category	Third-party A2A
Direction	inbound

Mode	Asynchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Replicate Advertisement Graphic as Bulk* service operation can be used by any industry for creating printed materials, which are used to communicate information to consumers.

Features

The inbound operation creates, updates, and deletes the image data.

Product images are required during the promotional planning process. Images can be assigned to one or more products. In addition, they can be imported to represent a theme; for example, a cow to promote chocolate. In this case, the picture does not have a product identifier. The image contains the path to the Multipurpose Internet Mail Extension (MIME) repository where the actual image is stored.

The operation includes the following main node:

- **Message Header**
Since the `AdvertisementGraphicBulkReplicationRequest_In` operation is enabled for bulk-handling, it is possible to send out more than one instance on advertising graphic object instances. The message header is defined at the bulk operation level and at the business object instance level. Either one of them must be filled while posting the inbound message. The receiver system first reads the details defined in the instance level message header. If this level is not defined, the system copies the detail from the bulk message header.

Message Types

- `Advertisement Graphic Replication Bulk Request`

Error Handling

The *Replicate Advertisement Graphic as Bulk* operation supports the Forward Error Handling (FEH) concept.

Notes on SAP Implementation

Enhancements

The `/DMF/SE_PMR_ADGRPHCRPLCT` Business Add-In (BAI) is available for this inbound operation. The BAI is used to enhance the inbound message, and it is defined as an external customer BAI. A default implementation is not delivered.

8.7.2 Assortment Management

Definition

Manages assortments, store layout elements, location fixtures, and consumer product groups. This management includes the creation, update, and deletion of new assortment or store layout elements. Store layout elements can be assigned to assortments; an assortment can consist of one or more store layout elements. One or several store fixtures can be assigned to a store layout element.

Technical Data

Table 79:

Entity Type	Process Component
Software Component Version	ESM TDM 1.2
Technical Name	AssortmentManagement
Namespace	<code>http://sap.com/xi/ESM/ERP</code>

Business Context and Use

The *Assortment Management* process component enables the product group hierarchy (also known as article hierarchy) data.

8.7.2.1 Consumer Product Group Hierarchy

Definition

A group hierarchy of consumer products is an arrangement of product groups according to category management aspects. It is used to optimize product sales and planning business key figures, such as revenue, purchase budget,

and planning assortments. Subordinate product groups represent a semantic refinement of the respective superordinate product group.

Technical Data

Table 80:

Entity Type	Business Object
Software Component Version	ESM TDM 1.2
Technical Name	ConsumerProductGroupHierarchy
Object Category	Master Data Object

Business Context and Use

The *Consumer Product Group Hierarchy* business object can be used to do the following:

- Create custom product groups.
- Set areas of responsibility for users.

8.7.2.1.1 Consumer Product Group Hierarchy Replication In

Definition

An interface to receive the product group hierarchy data.

Technical Data

Table 81:

Entity Type	Service Interface
Category	SAP A2A
Direction	Inbound

Business Context and Use

The *Consumer Product Group Hierarchy Replication In* service interface contains an operation that receives the product group hierarchies.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.
- You have ensured that the logical system has been defined in Customizing under [Cross-Application Components](#) [Demand Data Foundation](#) [Basic Settings](#) [Define Logical Systems](#) . For more information, see the Customizing activity documentation (transaction **SPRO**).
- DDF receives the data through an eXtensible Markup Language (XML) message. The data is saved in DDF. For more information, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB> [<Version>](#) [Application Help](#) [SAP Customer Activity Repository](#) [Demand Data Foundation](#) [Integration Information](#) [Inbound Processing](#) .

8.7.2.1.1.1 Find Consumer Product Group Hierarchy by Elements

Definition

To find a consumer product group hierarchy by elements.

Technical Data

Table 82:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released
Technical Name	ConsumerProductGroupHierarchyTDMByElementsQuery Response_In

Namespace	http://sap.com/xi/RTLDMF/Global2
Category	SAP A2A
Direction	inbound
Mode	Synchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Find Consumer Product Group Hierarchy by Elements* service operation is used when a business application requires information about the group hierarchy of consumer products. It also provides data to a reporting system that uses the consumer product group hierarchy.

Features

Message Types

- `ConsumerProductGroupHierarchyTDMByElementsQuery`
Receives data for the group hierarchy of consumer products searches. This type can contain data for the hierarchy ID and the description.
- `ConsumerProductGroupHierarchyTDMByElementsResponse`
Returns the hierarchy data, which is based on the search criteria mentioned in the inbound message.

Notes on SAP Implementation

- The generated proxy in Demand Data Foundation (DDF) is the `/DMF/CL_PMR_CPGHTDM001QR` ABAP class. The proxy data type is used in DDF for the `/DMF/PMR_CPGH_ELEMENTS_QUERY` incoming query message and the `/DMF/PMR_CPGH_ELEMENTS_RESP` outgoing response.
- DDF uses the Service Mapping Tool (SMT) for the inbound message mapping (`/DMF/CL_CPGH_QRY_RESP_SMT` *Mapping* field). No other Customizing settings are required.
- If you do not select the *Unlimited* checkbox and send 0 (zero) as the maximum value, the system takes the upper limit as 1.

Enhancements

The /DMF/SE_PMR_CPGHTDM001QR Business Add-In (BAI) is available for this operation. The BAI contains the /DMF/IF_SE_PMR_CPGHTDM001QR interface with the INBOUND_PROCESSING and OUTBOUND_PROCESSING methods.

The INBOUND_PROCESSING method is called during the inbound data mapping and can be used in the following cases:

- To overwrite the existing mapping.
- To map additional data if new elements were added to the message.

The /DMF/CO_CPGH_ELMNTS_QUERY_MSG internal communication structure is used as the importing parameter of this method.

The OUTBOUND_PROCESSING method is called during the outbound data mapping and can be used in the following cases:

- To overwrite the existing mapping.
- To map additional data if new elements were added to the message.

The /DMF/FND_CPGH_ELEM_RESP internal communication structure is used as importing parameter of this method.

The Service Mapping Tool (SMT) allows you to enhance the inbound and outbound mapping. To enhance the mapping, you must select the /DMF/CL_CPGH_QRY_RESP_SMT application as the entry point.

More Information

The following nodes and elements do not contain any values in the ConsumerProductGroupHierarchyTDMByElementsResponse_sync response message, as data is not available in the back-end system:

- Consumer Product Group Hierarchy Level
 - SalesOrganisationID
 - SystemAdministrativeData
 - DistributionChannelCode
 - LifeCycleStatusCode
 - LifeCycleStatusName
 - ProductMultipleAssignmentAllowedIndicator
 - TimeDependencyIndicator
- Consumer Product Group Level
 - ConsumerProductGroup
 - HierarchyLevelOrdinalNumberValue

The supplementary components of the ConsumerProductGroupHierarchyTDMByElementsQuery_sync inbound message are not relevant for the implementation of operations.

8.7.2.1.2 Query Consumer Product Group Hierarchy In

Definition

An interface to search for consumer product group hierarchies.

Technical Data

Table 83:

Entity Type	Service Interface
Category	A2X
Direction	Inbound

Business Context and Use

The *Query Consumer Product Group Hierarchy In* service interface contains an operation that allows an application to request the data associated with one or more group hierarchies of consumer product.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.
- You have ensured that the logical system has been defined in Customizing under **► Cross-Application Components ► Demand Data Foundation ► Basic Settings ► Define Logical Systems ►**. For more information, see the Customizing activity documentation (transaction **SPRO**).

8.7.2.1.2.1 Replicate Consumer Product Group Hierarchy

Definition

To replicate the product group hierarchy data.

Technical Data

Table 84:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released
Technical Name	ConsumerProductGroupHierarchyReplicationRequest_In
Namespace	http://sap.com/xi/RTLDMF/Global2
Category	SAP A2A
Direction	Inbound
Mode	Asynchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The [Replicate Consumer Product Group](#) service operation is used to replicate the product group information.

Features

This operation creates, updates, and deletes the data. The operation contains the following main elements:

- ID
Group hierarchy ID of the consumer product
- Consumer product group
 - ID
Product group ID
 - Name
 - Hierarchy relationship
 - Description
Description of the product category ID
- Description
Description of the group hierarchy of consumer products

Message Types

- Consumer Product Group Hierarchy Replication Request

Error Handling

The *Replicate Consumer Product Group* service operation supports the Forward Error Handling (FEH) concept.

Notes on SAP Implementation

- The Interface Workbench receives all data coming through an XML message. The relevant tables for this process component are as follows:
 - /DMF/MDIF_PROH
 - /DMF/MDIF_PROHN
 - /DMF/MDIF_PROHNT
 - /DMF/MDIF_PROHTX
- The generated proxy in Demand Data Foundation (DDF) is the /DMF/CL_PMR_CPGHRPLCTRQ ABAP class. The proxy data type is used in DDF for the /DMF/FND_CPGH_RPLCTN_REQ incoming bulk replication message.
- DDF uses the Service Mapping Tool (SMT) for the inbound message mapping (/DMF/CL_CNSMR_PROD_GROUP_SMT *Mapping* field).

Enhancements

The DMF/SE_PMR_CPGHRPLCTRQ Business Add-In (BAI) is available for this operation. The BAI contains the /DMF/IF_SE_PMR_CPGHRPLCTRQ interface with the INBOUND_PROCESSING method.

The method is called during the inbound data mapping and can be used in the following cases:

- To overwrite the existing mapping.
- To map additional data.

The /DMF/CO_CPGH_RPLCTN_CPGH_MDT internal communication structure is used as the importing parameter for this method.

More Information

The *Replicate Consumer Product Group Hierarchy* service operation processes the *Consumer Product Group Hierarchy Replication* request message, which is structured as follows:

- Message Header (BusinessDocumentMessageHeader data type). Note that DDF only supports the processing of data from the following elements of the message header node: CreationDateTime and SenderBusinessSystemID.
- ConsumerProductGroupHierarchy

The following nodes and their corresponding elements are not relevant:

- DistributionChannelCode
- LifeCycleStatusCode
- TimeDependencyIndicator
- ProductMultipleAssignmentAllowedIndicator
- ConsumerProductGroup
 - CategoryManagementCategoryIndicator
 - HierarchyLevelOrdinalNumberValue
 - HierarchyRelationship (ValidityPeriod)
- Level
 - Description

Supplementary components in the *Replicate Consumer Product Group Hierarchy* operation are not relevant for implementing this service.

8.7.3 Business Partner Data Management

Definition

Enables a company to manage the business partner data that is relevant to control business processes, such as sales, purchasing, and accounting.

Technical Data

Table 85:

Entity Type	Process Component
Software Component Version	ESM TDM 1.2
Technical Name	BusinessPartnerDataManagement
Namespace	http://sap.com/xi/ESM/ERP

Business Context and Use

The *Business Partner Data Management* process component is used to identify the supplier.

8.7.3.1 Supplier

Definition

A business partner that provides products or services.

Technical Data

Table 86:

Entity Type	Business Object
Software Component Version	ESM TDM1.2
Technical Name	Supplier
Object Category	Master Data Object

Business Context and Use

The `Supplier` business object provides the supplier information.

8.7.3.1.1 Supplier Replication In

Definition

An interface to receive the supplier data.

Technical Data

Table 87:

Entity Type	Service Interface
Category	SAP A2A
Direction	Inbound

Business Context and Use

The *Supplier Replication In* inbound interface contains an operation that receives the supplier (also known as vendor) master data. The vendor data can be used when creating vendor funds.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.
- You have ensured that the logical system has been defined in Customizing under **► Cross-Application Components ► Demand Data Foundation ► Basic Settings ► Define Logical Systems** **►**. For more information, see the Customizing activity documentation (transaction **SPRO**).
- DDF receives the data through an eXtensible Markup Language (XML) message. The data is saved in DDF. For more information, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB> **► <Version> ► Application Help ► SAP Customer Activity Repository ► Demand Data Foundation ► Integration Information ► Inbound Processing** **►**.

8.7.3.1.1.1 Replicate Supplier as Bulk V1

Definition

To replicate the supplier data.

Technical Data

Table 88:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released
Technical Name	SupplierReplicateBulkRequest_In
Namespace	http://sap.com/xi/RTLDMF/Global2

Category	SAP A2A
Direction	inbound
Mode	Asynchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Replicate Supplier as Bulk V1* service operation is used to receive the supplier (also known as vendor) master data.

Features

The inbound operation creates, updates, and deletes the vendor data.

The operation includes the following main nodes:

- External Location Identifier
- Sending System Identifier
- Time Zone
- Address Data

Message Types

- `SupplierReplicateBulkRequest_V1`

Error Handling

The *Replicate Supplier as Bulk V1* operation supports Forward Error Handling (FEH).

Notes on SAP Implementation

- The vendor is defined in the location master data using the *Location Type Code* field with entry **1011**.
- The Interface Workbench receives all data coming through an Extensible Markup Language (XML) message. The relevant tables for this process component are as follows: `/dmf/mdif_loc`, `/dmf/mdif_loctxt`, `/dmf/mdif_locadr`, and `/dmf/mdif_locass`.

- The generated proxy in Demand Data Foundation (DDF) is the `/DMF/CL_FND_SPLRRPLCTBLK` ABAP class. The proxy data type is used in DDF for the `/DMF/FND_SPLR_RPLCT_BLK_RQ` incoming bulk replication message.
- The Service Implementation Workbench (SIW) is used to implement the service back-end system. The SIW uses the `/DMF/II_FND_SPLRRPLCTBLK` project ID configuration name and the `/DMF/CL_FND_SPLRRPLCTBLK_SI` generated service implementation class.
- DDF uses the Service Mapping Tool (SMT) for the inbound message mapping (`/DMF/CL_SUPPLIER_SMT Mapping` field).

Enhancements

The `/DMF/SE_FND_SPLRRPLCTBLK` Business Add-In (BAI) is available for this operation. The BAI is used to enhance the inbound message, and it is defined as an external customer BAI. A default implementation is not delivered.

8.7.3.1.2 Query Supplier In

Definition

An interface to search for suppliers.

Technical Data

Table 89:

Entity Type	Service Interface
Category	SAP A2A
Direction	Inbound

Business Context and Use

The [Query Supplier In](#) service interface contains an operation that allows an application to request the supplier data.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on

SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.

- You have ensured that the logical system has been defined in Customizing under ► *Cross-Application Components* ► *Demand Data Foundation* ► *Basic Settings* ► *Define Logical Systems* ►. For more information, see the Customizing activity documentation (transaction **SPRO**).

8.7.3.1.2.1 Find Supplier by Elements

Definition

To find a supplier by elements.

Technical Data

Table 90:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released
Technical Name	SupplierTDMByElementsQueryResponse_In
Namespace	http://sap.com/xi/RTLDMF/Global2
Category	SAP A2A
Direction	Inbound
Mode	Synchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Find Supplier by Elements* service operation is used when a business application requires the supplier information.

Features

Message Types

- `SupplierTDMByElementsQuery_sync`
- `SupplierTDMByElementsResponse_sync`

8.7.4 Demand Forecast Processing

Definition

Receives, processes, and releases demand forecasts.

Technical Data

Table 91:

Entity Type	Process Component
Software Component Version	ESM TDM 1.2
Technical Name	DemandForecastProcessing
Namespace	<code>http://sap.com/xi/ESM/ERP</code>

Business Context and Use

The *Demand Forecast Processing* process component allows an external application to request forecast information.

8.7.4.1 Demand Forecast

Definition

A demand predicted for a particular product, in a particular location, for a given scenario, for a specific time period in the future.

Technical Data

Table 92:

Entity Type	Business Object
Software Component Version	ESM TDM 1.2
Technical Name	DemandForecast
Object Category	Business Process Object

Business Context and Use

The *Demand Forecast* business object provides the interface that collects and stores additional forecasts.

8.7.4.1.1 Manage Demand Forecast In

Definition

An interface to manage the demand forecast.

Technical Data

Table 93:

Entity Type	Service Interface
Category	SAP A2A
Direction	Inbound

Business Context and Use

The *Manage Demand Forecast In* inbound interface contains an operation that provides the demand forecast to an external application.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.
- You have ensured that the logical system has been defined in Customizing under **► Cross-Application Components ► Demand Data Foundation ► Basic Settings ► Define Logical Systems ►**. For more information, see the Customizing activity documentation (transaction **SPRO**).

8.7.4.1.1.1 Read Demand Forecast

Definition

To read the demand forecast data by ID.

Technical Data

Table 94:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released
Technical Name	DemandForecastTDMByIDQueryResponse_In
Namespace	http://sap.com/xi/RTLDMF/Global2
Category	SAP A2A
Direction	Inbound
Mode	Asynchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Read Demand Forecast* service operation is used to provide the demand forecast data to an external system, which requests the forecast for use in other processes.

Features

The inbound operation provides the demand forecast data.

Message Types

- `DemandForecastTDMByIDQuery_sync`
Receives data for the demand forecast search.
This type can contain data for the following: Time Bucket Size Code, Forecast Period, Material ID, Location ID, Retail Incentive Offer ID.
- `DemandForecastTDMByIDResponse_sync`
Returns the demand forecast data, which is based on the search criteria from the inbound message. At least one input parameter is required in the query. The result is returned based on the AND operation over all inputs provided.
- `StandardMessageFault`

Notes on SAP Implementation

- The generated proxy in the Demand Data Foundation (DDF) back-end system is the `/DMF/CO_FND_DMNDFCSTRPLCTBLK` ABAP class. The proxy data type is used in the DDF back-end system for the `/DMF/FND_DMND_FCST_RPLCTN_BLK` bulk replication message.
- The method calls are as follows:
 - `/dmf/cl_dmnd_fcst_assist=>mapping_inbound_qr`
 - `/dmf/cl_dmnd_fcst_assist=>read_dmnd_fcst`
 - `/dmf/cl_dmnd_fcst_assist=>mapping_outbound_qr`
- If you do not select the *Unlimited* checkbox and send 0 (zero) as the maximum value, the system takes the upper limit as 1.

Enhancements

The Business Add-In (BAI) in the `/DMF/SE_SPOT_DMNDFCST` enhancement spot is available for this operation. The BAI is used to enhance the inbound and outbound messages, and it is defined as an external customer BAI. A default implementation is not provided.

8.7.4.1.2 Demand Forecast Replication Out

Definition

An interface to replicate demand forecasts.

Technical Data

Table 95:

Entity Type	Service Interface
Category	Third-Party A2A
Direction	Outbound

Business Context and Use

The *Demand Forecast Replication Out* service interface contains an operation that provides the forecast data requested by external applications to support reporting or planning activities.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.
- You have ensured that the logical system has been defined in Customizing under ► *Cross-Application Components* ► *Demand Data Foundation* ► *Basic Settings* ► *Define Logical Systems* ►. For more information, see the Customizing activity documentation (transaction **SPRO**).
- The default modeling and forecasting models must be defined in Customizing under ► *Cross-Application Components* ► *Demand Data Foundation* ► *Modeling and Forecasting* ►.
- The generated proxy in DDF is the `/DMF/CO_FND_DMNDFCSTRPLCTBLK` ABAP class. If you have an application-to-application (A2A) communication, the proxy class can be called directly to execute the service.

8.7.4.1.2.1 Request Demand Forecast Replication as Bulk

Definition

To replicate demand forecasts.

Technical Data

Table 96:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released
Technical Name	DemandForecastReplicationBulkRequest_Out
Namespace	http://sap.com/xi/RTLDMF/Global2
Category	Third-party A2A
Direction	Outbound
Mode	Asynchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Request Demand Forecast Replication as Bulk* service operation is used to allow an external application to request the forecast data.

Features

The information nodes are as follows:

- DemandForecast
- DemandPlanningTimeSeriesItem

- ProcessedTimeSeriesItem

Message Types

- Demand Forecast Replication Bulk Request

Notes on SAP Implementation

The generated proxy in Demand Data Foundation (DDF) is the `/DMF/CO_FND_DMNDFCSTRPLCTBLK` ABAP class. The proxy data type is used in DDF for the `/DMF/FND_DMND_FCST_RPLCTN_BLK` bulk replication message.

8.7.5 Demand Planning Time Series Processing

Definition

Contains the time series information that is relevant for calculating the demand forecast.

Technical Data

Table 97:

Entity Type	Process Component
Software Component Version	ESM TDM 1.2
Technical Name	DemandPlanningTimeSeriesProcessing
Namespace	http://sap.com/xi/ESM/ERP

Business Context and Use

The *Demand Planning Time Series Processing* process component contains the time series information, which can be used in the demand modeling process.

8.7.5.1 Demand Planning Time Series

Definition

A time series is a set of data that is distributed over time, such as demand data in monthly time period occurrences.

Technical Data

Table 98:

Entity Type	Business Object
Software Component Version	ESM TDM 1.2
Technical Name	DemandPlanningTimeSeries
Object Category	Business Process Object

Business Context and Use

The *Demand Planning Time Series* business object provides an alternative set of time series information. It can represent the sales history or any other set of data that requires information by date.

8.7.5.1.1 Demand Planning Time Series Notification In

Definition

An interface to notify of a demand planning time series.

Technical Data

Table 99:

Entity Type	Service Interface
Category	SAP A2A

Direction	Inbound
-----------	---------

Business Context and Use

The *Demand Planning Time Series Notification In* inbound interface contains an operation that provides time series data, such as forecasts or sales histories.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.
- You have ensured that the logical system has been defined in Customizing under **►► Cross-Application Components ► Demand Data Foundation ► Basic Settings ► Define Logical Systems** **►**. For more information, see the Customizing activity documentation (transaction **SPRO**).
- DDF receives the data through an eXtensible Markup Language (XML) message. The data is saved in DDF. For more information, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB> **► <Version> ► Application Help ► SAP Customer Activity Repository ► Demand Data Foundation ► Integration Information ► Inbound Processing** **►**.

8.7.5.1.1.1 Maintain Demand Planning Times Series based on Times Series Bulk Notification

Definition

To replicate the time series data.

Technical Data

Table 100:

Entity Type	Service Operation
-------------	-------------------

Software Component	RTLDDF
Release State	Released
Technical Name	DemandPlanningTimeSeriesBulkNotification_In
Namespace	http://sap.com/xi/RTLDMF/Global2
Category	SAP A2A
Direction	Inbound
Mode	Asynchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Maintain Demand Planning Times Series based on Times Series Bulk Notification* service operation is used to receive the time series data.

Features

The inbound operation creates, updates, and deletes the data.

The main nodes for the sales data are as follows:

- External Location Identifier
- External Product Identifier
- Offer Identifier
- Sending System Identifier
- Sales Quantity
For actual sales, this is a positive number (mandatory). For returns, this is a negative number.
- Sales Quantity Unit of Measure
Specifies the selling unit of measure (UoM) of the supplied quantity.
- Validity Time and Granularity
Specifies the time granularity of the sales data. This granularity can be either **D** (daily) or **W** (weekly).
- Sales Price excluding Tax
Specifies the monetary value of the sale without tax.
- Sales Price including Tax
Specifies the monetary value of the sale with tax.

- Transaction Count
Specifies the number of transactions for a given time.
- Squared Unit Count
Specifies the square of the summation of units.
- Cubic Unit Count
Specifies the cube of the sum of units.

The main nodes for the store traffic data are as follows:

- External Location Identifier
- Sending System Identifier
- Date
Contains the date for the *Count* element.
- Count
Defines the number of transactions that had a sales quantity different from zero.

The main nodes for the generic data (consumption data) are as follows:

- External Location Identifier
- External Product Identifier
- Sending System Identifier
- Key Figure Parameter
Describes the generic time series (such as consumption versus goods issued).
- Quantity
The sales quantity can only be a positive number.
- Quantity Unit of Measure
The unit of measure for the supplied quantity.
- Validity Time and Granularity

Message Types

- Demand Planning Time Series Bulk Notification

Error Handling

The *Maintain Demand Planning Times Series based on Times Series Bulk Notification* operation supports the Forward Error Handling (FEH) concept.

Notes on SAP Implementation

Demand Data Foundation (DDF) can receive the following time series data:

- Sales
- Store traffic
- Generic (consumption)

The Interface Workbench receives all data coming through an Extensible Markup Language (XML) message. The `/DMF/TS_GENERIC` table is relevant for this process.

Enhancements

The /DMF/SE_SORT_FND_DMPLTSBLKNO Business Add-In (BAI) is available for this operation. A default implementation is not provided.

8.7.5.1.2 Query Demand Planning Time Series In

Definition

An interface to search demand planning time series.

Technical Data

Table 101:

Entity Type	Service Interface
Category	SAP A2A
Direction	Inbound

Business Context and Use

The *Query Demand Planning Time Series In* inbound interface contains an operation that allows an external application to request the time series data.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.
- You have ensured that the logical system has been defined in Customizing under **► Cross-Application Components ► Demand Data Foundation ► Basic Settings ► Define Logical Systems ►**. For more information, see the Customizing activity documentation (transaction **SPRO**).

8.7.5.1.2.1 Find Demand Planning Times Series by Elements

Definition

To find demand planning time series by elements.

Technical Data

Table 102:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released
Technical Name	DemandPlanningTimeSeriesTDMByElementsQueryResponse_In
Namespace	http://sap.com/xi/RTLDMF/Global2
Category	SAP A2A
Direction	Inbound
Mode	Synchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Find Demand Planning Times Series by Elements* service operation is used to request the time series data for supporting standard business processes.

In support of various planning or business purposes, an external application can request any time based data, such as the sales history or the forecast data.

For example, a merchandise planner creates the following year's revenue goals. The planning application can retrieve both the future forecast for a specific time period and the sales history to better understand the previous period's performance.

Features

Message Types

- `DemandPlanningTimeSeriesTDMByElementsQuery_sync`
Receives data for the demand planning time series search. This type can contain data for the following: Time Bucket Size Code, Validity Period, Material ID, Location ID, Retail Incentive Offer ID, Type Code.
- `DemandPlanningTimeSeriesTDMByElementsResponse_sync`
Returns the following data types, which is based on the search criteria mentioned in the inbound message: Consumption Time Series, POS Time Series, Store Traffic Time Series. At least one input parameter must be provided for the query. The output is based on the `AND` operation over all input parameters provided.
- `StandardMessageFault`

Notes on SAP Implementation

- Mapping is performed using the Service Mapping Tool (SMT) and no other Customizing settings are required.
- The method calls are as follows:
 - `/dmf/cl_dmpl_ts_assist=>mapping_inbound_qr`
 - `/dmf/cl_dmpl_ts_assist=>read_ext_time_series`
 - `/dmf/cl_dmpl_ts_assist=>mapping_outbound_qr`
- If you do not select the *Unlimited* checkbox and send 0 (zero) as the maximum value, the system takes the upper limit as 1.

8.7.6 Inventory Processing

Definition

Manages the tasks required to record inventory changes and the associated activities.

Technical Data

Table 103:

Entity Type	Process Component
Software Component Version	ESM TDM 1.2
Technical Name	InventoryProcessing
Namespace	<code>http://sap.com/xi/ESM/ERP</code>

Business Context and Use

The *Inventory Processing* process component enables inventory information.

8.7.6.1 Inventory

Definition

A quantity of all materials in a location, including the material reservations at this location.

Technical Data

Table 104:

Entity Type	Business Object
Software Component Version	ESM TDM 1.2
Technical Name	Inventory
Object Category	Business Process Object

Business Context and Use

The *Inventory* business object provides the inventory information.

8.7.6.1.1 Inventory Replication In

Definition

An interface to receive the inventory data.

Technical Data

Table 105:

Entity Type	Service Interface
Category	SAP A2A
Direction	Inbound

Business Context and Use

The *Inventory Replication In* service interface contains an operation that receives the inventory data.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.
- You have ensured that the logical system has been defined in Customizing under **► Cross-Application Components ► Demand Data Foundation ► Basic Settings ► Define Logical Systems** **►**. For more information, see the Customizing activity documentation (transaction **SPRO**).
- DDF receives the data through an eXtensible Markup Language (XML) message. The data is saved in DDF. For more information, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB> **► <Version> ► Application Help ► SAP Customer Activity Repository ► Demand Data Foundation ► Integration Information ► Inbound Processing** **►**.
- The generated proxy in Demand Data Foundation (DDF) is the `/DMF/CL_FND_INVNPLCTBLKRQ` ABAP class. If you have an A2A communication, the proxy class can be called directly to execute the service.

8.7.6.1.1.1 Inventory Replication

Definition

To replicate the inventory data.

Technical Data

Table 106:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released
Technical Name	InventoryTDMReplicationBulkRequest_In
Namespace	http://sap.com/xi/RTLDMF/Global12
Category	SAP A2A
Direction	Inbound
Mode	Asynchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The [Replicate Inventory as Bulk](#) service operation is used to replicate the inventory data, such as the amount of inventory by location.

Features

The inbound operation creates and updates the inventory data.

The operation includes the following main elements:

- External Location Identifier
- External Product Identifier
- Sending System Identifier
Defines the logical system.
- Stock Type
Defines the use of a certain stock quantity. Only free available stock is accepted.
- Inventory Direction Movement Code
Defines whether goods have been issued or received.
- Stock Quantity
Represents the stock quantity, which can be a positive number or 0 (zero).

- Stock Quantity Unit of Measure
Represents the unit of measure (UoM) for the supplied quantity.
- Validity Date
Represents the date when the stock has been calculated by the central stock management system.

Message Types

- Inventory TDM Replication Bulk Request

Error Handling

The *Replicate Inventory as Bulk* operation supports the Forward Error Handling (FEH) concept.

Constraints

The following nodes and elements of the message type are not relevant:

Inventory

- InventoryManagedLocationInternalID

Item

- InventorySpecialStockTypeCode
- SellerPartyInternalID
- ProductRecipientPartyInternalID

Aggregation Overview (complete node is not relevant in the system)

- MaterialInternalID
- Description
- InventoryUsabilityCode
- InventoryUsabilityName
- InventorySpecialStockTypeCode
- InventorySpecialStockTypeName
- Quantity

Notes on SAP Implementation

- The generated proxy in DDF is the `/DMF/CL_FND_INVRPLCTBLKRQ` ABAP class. The proxy data type is used in DDF for the `/DMF/FND_INV_TDM_RPLCT_REQ` incoming bulk replication message.
- The Service Implementation Workbench (SIW) is used to implement the service back-end system. The SIW uses the `/DMF/II_FND_INVRPLCTBLKRQ` project ID configuration name and the `/DMF/CL_FND_INVRPLCTBLK_SI` generated service implementation class.

- DDF uses the Service Mapping Tool (SMT) for the inbound message mapping (`/DMF/CL_INV_RPLCTN_SMT Mapping` field).

Enhancements

The `/DMF/SE_FND_INVRPLCTBLK` Business Add-In (BAdI) is available for this operation. The BAdI contains the `/DMF/IF_SE_FND_INVRPLCTBLK` interface with the `INBOUND_PROCESSING` method.

The method is called during the inbound data mapping and can be used in the following cases:

- To overwrite the existing mapping.
- To map additional data if new elements were added to the message.

The `/DMF/CO_INV_RPLCTN_REQ_MSG_S` internal communication structure is used as the importing parameter for the method.

The Service Mapping Tool (SMT) allows you to enhance the inbound and outbound mapping. To enhance the mapping, you must select the `/DMF/CL_INV_RPLCTN_SMT` application as the entry point.

8.7.7 Location Data Management

Definition

Manages the master data required for physical locations. This management includes objects that depend on the location or group of locations.

Technical Data

Table 107:

Entity Type	Process Component
Software Component Version	ESM TDM 1.2
Technical Name	LocationDataManagement
Namespace	<code>http://sap.com/xi/ESM/ERP</code>

Business Context and Use

The *Location Data Management* process component enables the location hierarchy information.

8.7.7.1 Location Group Hierarchy

Definition

A hierarchical arrangement of locations based on business aspects.

Technical Data

Table 108:

Entity Type	Business Object
Software Component Version	ESM TDM 1.2
Technical Name	LocationGroupHierarchy
Object Category	Master Data Object

Business Context and Use

The *Location Group Hierarchy* business object provides the location hierarchy information.

8.7.7.1.1 Location Group Hierarchy Replication In

Definition

An interface to receive the location group hierarchy.

Technical Data

Table 109:

Entity Type	Service Interface
Category	SAP A2A
Direction	Inbound

Business Context and Use

The *Location Group Hierarchy Replication In* service interface contains an operation that receives the location group hierarchy.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.
- You have ensured that the logical system has been defined in Customizing under **► Cross-Application Components ► Demand Data Foundation ► Basic Settings ► Define Logical Systems ►**. For more information, see the Customizing activity documentation (transaction **SPRO**).
- DDF receives the data through an eXtensible Markup Language (XML) message. The data is saved in DDF. For more information, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB> **► <Version> ► Application Help ► SAP Customer Activity Repository ► Demand Data Foundation ► Integration Information ► Inbound Processing ►**.
- Mapping is performed using the Service Mapping Tool (SMT) and no other Customizing settings are required.
- If you do not select the *Unlimited* checkbox and send 0 (zero) as the maximum value, the system takes the upper limit as 1.

8.7.7.1.1 Replicate Location Group Hierarchy as Bulk

Definition

To replicate location group hierarchies.

Technical Data

Table 110:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released

Technical Name	LocationGroupHierarchyReplicationBulkRequest_In
Namespace	http://sap.com/xi/RTLDMF/Global2
Category	SAP A2A
Direction	Inbound
Mode	Asynchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Replicate Location Group Hierarchy as Bulk* service operation is used to replicate the location group and the location hierarchy.

Features

Message Types

- LocationGroupHierarchyReplicationBulkRequest

8.7.7.2 Location

Definition

A geographical place.

Technical Data

Table 111:

Entity Type	Business Object
Software Component Version	ESM TDM 1.2

Technical Name	Location
Object Category	Master Data Object

Business Context and Use

The *Location* business object provides the location information.

8.7.7.2.1 Query Location Group Hierarchy In

Definition

An interface to search for location group hierarchies.

Technical Data

Table 112:

Entity Type	Service Interface
Category	A2X
Direction	Inbound

Business Context and Use

The *Query Location Group Hierarchy In* service interface contains an operation that searches for location group hierarchies.

The operations contained in the *Location Data Management* process component are suitable for use in the retail and consumer products industries.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on

SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.

- You have ensured that the logical system has been defined in Customizing under **► Cross-Application Components ► Demand Data Foundation ► Basic Settings ► Define Logical Systems ►**. For more information, see the Customizing activity documentation (transaction **SPRO**).
- If you do not select the *Unlimited* checkbox and send 0 (zero) as the maximum value, the system takes the upper limit as 1.

8.7.7.2.1 Find Location Group Hierarchy by Element

Definition

To find a location group hierarchy by element.

Technical Data

Table 113:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released
Technical Name	LocationGroupHierarchyTDMByElementsQueryResponse_In
Namespace	http://sap.com/xi/RTLDME/Global2
Category	A2X
Direction	Inbound
Mode	Synchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Find Location Group Hierarchy by Element* service operation is used to search for location group hierarchies by elements.

Features

Message Types

- `LocationGroupHierarchyTDMByElementsQuery_sync`
Receives data for the location hierarchy search. This type can contain data for the hierarchy ID and the description.
- `LocationGroupHierarchyTDMByElementsResponse_sync`
Returns the hierarchy data, which is based on the search criteria from the inbound message. At least one input parameter (hierarchy ID or description) must be provided for the query. The output is based on the AND operation for all input parameters provided.
- `StandardMessageFault`

Notes on SAP Implementation

- The generated proxy in Demand Data Foundation (DDF) is the `/DMF/CL_FND_LOCGRP01QR` ABAP class. The proxy data type is used in DDF for the `/DMF/FND_LOC_HR_TDM_ELEM_QRY` incoming query message and the `/DMF/FND_LOC_HR_TDM_ELEM_RES` outgoing response message.
- DDF uses the Service Mapping Tool (SMT) for the inbound message mapping (`/DMF/CL_LOC_HIER_SMT Mapping` field).
- If you do not select the *Unlimited* checkbox and send 0 (zero) as the maximum value, the system takes the upper limit as 1.

Enhancements

The `/DMF/SE_FND_LOCGRP01` Business Add-In (BAI) is available for this operation. The BAI contains the `/DMF/IF_SE_FND_LOCGRP01` interface with the `INBOUND_PROCESSING` and `OUTBOUND_PROCESSING` methods.

The `INBOUND_PROCESSING` method is called during the inbound data mapping and can be used in the following cases:

- To overwrite the existing mapping.
- To map additional data if new elements were added to the message.

The `/DMF/CO_LOC_GRP_HR_ELEMNT_QRY` internal communication structure is used as the importing parameter of this method.

The `OUTBOUND_PROCESSING` method is called during the outbound data mapping and can be used in the following cases:

- To overwrite the existing mapping.

- To map additional data if new elements were added to the message.

The DMF/FND_LOC_HR_ELEM_RESP internal communication structure is used as importing parameter of this method.

The Service Mapping Tool (SMT) allows you to enhance the inbound and outbound mapping. To enhance the mapping, you must select the /DMF/CL_LOC_HIER_SMT application as the entry point.

More Information

The following nodes and elements do not contain any values in the LocationGroupHierarchyTDMByElementsResponse_sync response message because the data is not available in the back-end system:

- LocationGroupHierarchy (validity period)
- LocationGroup (property)

Supplementary components of the LocationGroupHierarchyTDMByElementsQuery_sync inbound message are not relevant for the service implementation.

8.7.7.2 Query Location In

Definition

An interface to search for locations.

Technical Data

Table 114:

Entity Type	Service Interface
Category	A2X
Direction	Inbound

Business Context and Use

The *Location* service interface contains an operation that searches for locations.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.
- You have ensured that the logical system has been defined in Customizing under **► Cross-Application Components ► Demand Data Foundation ► Basic Settings ► Define Logical Systems ►**. For more information, see the Customizing activity documentation (transaction **SPRO**).

8.7.7.2.1 Find Location by Elements

Definition

To find a location by elements.

Technical Data

Table 115:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released
Technical Name	LocationTDMyElementsQueryResponse_In
Namespace	http://sap.com/xi/RTLDMF/Global2
Category	A2X
Direction	Inbound
Mode	Synchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Find Location by Elements* service operation is used to find a location by elements.

Features

Message Types

- LocationTDMByElementsQuery_sync
- LocationTDMByElementsResponse_sync

8.7.8 Merchandise Management

Definition

Provides a comprehensive merchandise view for a product, including bill of material, matrix of product and variants, sales price information, and purchase price information. Merchandise management allows a company to transmit this comprehensive view to systems that cannot manage single objects, for example, product and price. Furthermore, it allows a company to provide to external entities the read access to this comprehensive view.

Technical Data

Table 116:

Entity Type	Process Component
Software Component Version	ESM TDM 1.2
Technical Name	MerchandiseManagement
Namespace	http://sap.com/xi/ESM/TDM

Business Context and Use

The *Merchandise Management* process component allows an external application to request the product information, such as the various units of measure (UoMs), language-dependent text, and hierarchy assignments.

8.7.8.1 Merchandise

Definition

A comprehensive merchandise view of a product, including the sales price information.

Technical Data

Table 117:

Entity Type	Business Object
Software Component Version	ESM TDM 1.2
Technical Name	Merchandise
Object Category	Transformed Object

Business Context and Use

The [Merchandise](#) business object contains the operations used to provide the product information.

8.7.8.1.1 Merchandise Replication In

Definition

An interface to receive the merchandise.

Technical Data

Table 118:

Entity Type	Service Interface
Category	SAP A2A
Direction	Inbound

Business Context and Use

The *Merchandise Replication In* service interface contains an operation that receives the following:

- Product
- Product location combination

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.
- You have ensured that the logical system has been defined in Customizing under **► Cross-Application Components ► Demand Data Foundation ► Basic Settings ► Define Logical Systems** **►**. For more information, see the Customizing activity documentation (transaction **SPRO**).
- DDF receives the data through an eXtensible Markup Language (XML) message. The data is saved in DDF. For more information, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB> **► <Version> ► Application Help ► SAP Customer Activity Repository ► Demand Data Foundation ► Integration Information ► Inbound Processing** **►**.
- Mapping is performed using the Service Mapping Tool (SMT) and no other Customizing settings are required.

8.7.8.1.1.1 Replicate Merchandise Demand Management as Bulk

Definition

To replicate the relevant attributes of a merchandise.

Technical Data

Table 119:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released

Technical Name	MerchandiseDemandManagementReplicationBulkRequest_In
Namespace	http://sap.com/xi/RTLDMF/Global2
Category	SAP A2A
Direction	Inbound
Mode	Asynchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Replicate Merchandise Demand Management as Bulk* service operation is used to receive the following data:

- Product
- Product location combination, such as sales and pricing information

Features

The *Replicate Merchandise Demand Management as Bulk* service operation provides the product-related master data.

This service operation is used to replicate the mass import of product data, along with hierarchy assignments, supply planning process, and sales price information.

The nodes for the basic product information are as follows:

- `Common`
Contains the collection of general information about a product.
- `Description`
Contains the language-dependent description of the product.
- `GlobalTradeItemNumberQuantity`
Contains the dependent identification of the product following the European Article Numbering-Uniform Code Council system (EAN-UCC).
- `QuantityConversion`
Contains the conversion factors between different units of measure for the product.
- `QuantityCharacteristicConversion`
Contains the conversion factors between the process-relevant units of measure and the units of measure for the product.

The nodes for the hierarchy assignments are as follows:

- `ProductCategoryAssignment`
Contains the assignment of the product category to the product.
- `ConsumerProductGroupAssignment`
Contains the assignment of the product group to the product.

The nodes related to the supply planning process and the sales price information are as follows:

- `SupplyPlanningProcess`
Contains the definition of the usability of a material in the supply planning process for a specific supply planning area.
- `SalesPriceInformation`
Contains a valid sales price specification, which is based on a pricing procedure for a specific `PriceSpecificationElementTypeCode`.

The internal ID for the product is mandatory; all other nodes are optional.

Message Types

- `MerchandiseDemandManagementReplicationBulkRequest_In`

Error Handling

The *Replicate Merchandise Demand Management as Bulk* operation supports Forward Error Handling (FEH).

Constraints

The following Complete Transmission Indicator (CTI) features are not implemented in the back-end system:

- `consumerProductGroupAssignmentListCompleteTransmissionIndicator`
- `descriptionListCompleteTransmissionIndicator`
- `globalTradeItemNumberListCompleteTransmissionIndicator`
- `quantityConversionListCompleteTransmissionIndicator`
- `quantityCharacteristicListCompleteTransmissionIndicator`
- `supplyPlanningProcessListCompleteTransmissionIndicator`
- `salesPriceInformationListCompleteTransmissionIndicator`

The default entry for the CTI is `FALSE`.

If CTI is set to `TRUE` for any of the nodes in the input, the CTI uses the `/DMF/SE_FND_MRCHDSDMRPLCT_CTI` Business Add-In (BAI). This BAI offers the `/DMF/IF_FND_MRCHDSDMRPLCT_CTI` interface containing the `INBOUND_PROCESSINGP_CTI` method. This method can be used to implement the logic for CTI.

If the CTI is `TRUE` for the respective node, all database entries for that particular *Product Internal ID* element should be deleted and replaced with the input data. The `/DMF/FND_MRCHDS_RPLCTN` internal communication structure is used as importing parameter of the `INBOUND_PROCESSING_CTI` method and can be used to implement the logic for the CTI handling of various nodes.

Notes on SAP Implementation

- The generated proxy in Demand Data Foundation (DDF) is the `/DMF/CL_FND_MRCHDSMRPLCTBLKRQ` ABAP class. DDF uses the proxy data type for the `/DMF/FND_MRCHDS_RPLCTN_BLKREQ` incoming bulk replication message.
- The Service Implementation Workbench (SIW) is used to implement the service back-end system. The SIW uses the `/DMF/II_FND_MRCHDSMRPLCTBLKRQ` project ID configuration name and the `/DMF/CL_FND_MRCHDSMRPL_SI` generated service implementation class.
- DDF uses the Service Mapping Tool (SMT) for the inbound message mapping (`/DMF/CL_FND_MRCHDSMRPLCTBLKRQ` *Mapping* field).

Enhancements

The `/DMF/SE_FND_MRCHDSMRPLCT` Business Add-In (BAI) is available for this operation. The BAI contains the `/DMF/IF_SE_PMR_CPGHTDM001QR` interface with the `INBOUND_PROCESSING` method.

The method is called during the inbound data mapping and can be used in the following cases:

- To overwrite the existing mapping.
- To map additional data.

The `DMF/CO_MRCHDS_RPLCTN_REQ_MSG` internal communication structure is used as the importing parameter for this method.

The Service Mapping Tool (SMT) allows you to enhance the inbound and outbound mapping. To enhance the mapping, you must select the `/DMF/CL_FND_MRCHDSMRPLCTBLKRQ` application as an entry point.

8.7.8.1.2 Query Merchandise In

Definition

An interface to search for merchandise.

Technical Data

Table 120:

Entity Type	Service Interface
Category	SAP A2A
Direction	Inbound

Business Context and Use

The *Query Merchandise In* service interface groups operations that contain searches for merchandise.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.
- You have ensured that the logical system has been defined in Customizing under **► Cross-Application Components ► Demand Data Foundation ► Basic Settings ► Define Logical Systems ►**. For more information, see the Customizing activity documentation (transaction **SPRO**).
- If you do not select the *Unlimited* checkbox and send 0 (zero) as the maximum value, the system takes the upper limit as 1.
- You have authorization to read the data in the following components in the back-end system:
 - Product
 - Product Text
 - Product Unit of Measure
 - Product Category
 - Product Category Hierarchy
 - Consumer Product Group
 - Consumer Product Group Hierarchy

8.7.8.1.2.1 Find Merchandise Material by Elements

Definition

To find a material by elements and return the material attributes that are valid globally at an organization.

Technical Data

Table 121:

Entity Type	Service Operation
Software Component	RTLDDF

Release State	Released
Technical Name	MerchandiseTDMMaterialByElementsQueryResponse_In
Namespace	http://sap.com/xi/RTLDMF/Global12
Category	A2X
Direction	Inbound
Mode	Synchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Find Merchandise Material by Elements* service operation is used to find a merchandise material by elements.

Features

Message Types

- `MerchandiseTDMMaterialByElementsQuery_sync`
 Receives data for the material search. This type can contain data for the following:
 - Material
 - Product Category
 - Product Category Hierarchy
 - Consumer Product Group
 - Consumer Product Group Hierarchy
- `MerchandiseTDMMaterialByElementsResponse_sync`
 Returns the following data based on the search criteria from the inbound message:
 - Material
 - Material Text
 - Material Unit of Measure
 - Product Category
 - Product Category Hierarchy
 - Consumer Product Group
 - Consumer Product Group Hierarchy
- `StandardMessageFault`

Notes on SAP Implementation

The method calls are as follows:

- /dmf/cl_material_assist=>mapping_inbound_001_qr
- /dmf/cl_material_assist=>read_mrchds_mat
- /dmf/cl_material_assist=>mapping_outbound_001_qr

Enhancements

The /DMF/SE_FND_MRCHNDSTDM001 Business Add-In (BAI) is available for this operation. The BAI is used to enhance the inbound and outbound messages, and it is defined as an external customer BAI. A default implementation is not delivered.

More Information

Supplementary components are not relevant for the *Find Merchandise Material by Elements* operation.

The following nodes are not relevant in the back-end system. Although they are present in the global definition of the message interface, they are deleted from the local interface:

- Text Collection
- Attachment Folder
- Matrix Material Property
- Matrix Material Assignment
- Property Valuation

8.7.8.1.2.2 Find Merchandise Supply Planning and Price by Elements

Definition

To read the product location combination and the pricing data.

Technical Data

Table 122:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released
Technical Name	MerchandiseTDMSupplyPlanningAndPriceByElementsQueryResponse_In

Namespace	http://sap.com/xi/RTLDMF/Global12
Category	A2X
Direction	Inbound
Mode	Synchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Find Merchandise Supply Planning and Price by Elements* service operation is used to read the product location combination and the pricing data.

Features

Message Types

- `MerchandiseTDMSupplyPlanningAndPriceByElementsQuery_sync`
 Receives data for the material search. This type can contain data for the following parameters:
 - Material ID
 - Material Description
 - Material GTIN
 - Material Merchandise Type Code
 - Material Merchandise Type Name
 - Product Category ID
 - Product Category Description
 - Consumer Product Group ID
 - Consumer Product Group Description
 - Supply Planning Area ID
 - Supply Planning Area Description
- `MerchandiseTDMSupplyPlanningAndPriceByElementsResponse_sync`
 Returns information for the material, the supply planning process, and the sales price information based on the search criteria from the inbound message. At least one of the following parameters must be provided:
 - Material ID
 - Material Description
 - Material GTIN
 - Material Merchandise Type Code

- Material Merchandise Type Name
- Product Category ID
- Product Category Description
- Consumer Product Group ID
- Consumer Product Group Description
- Supply Planning Area ID
- Supply Planning Area Description

The output is returned based on the AND operation over all input parameters provided.

Notes on SAP Implementation

- The generated proxy in Demand Data Foundation (DDF) is the `/DMF/CL_FND_MRCHNDSTDM002QR` ABAP class. The proxy data type is used in DDF for the `/DMF/FND_MRCHNDS_SUPPLNPRC_QRY` request message and for the `/DMF/FND_MRCHNDS_SUPPLNPRC_RSP` response message.
- The Service Implementation Workbench (SIW) is used to implement the service back-end system. The SIW uses the `/DMF/II_FND_MRCHNDSTDM002QR` project ID configuration name and the `/DMF/CL_FND_MRCHNDSTDM002QR_SI` generated service implementation class
- DDF uses the Service Mapping Tool (SMT) for the inbound message mapping (`/DMF/CL_MRCHNDS_SUP_PLN_QR_SMT` *Mapping* field).
- If you do not select the *Unlimited* checkbox and send 0 (zero) as the maximum value, the system takes the upper limit as 1.
- The method calls are as follows:
 - `/dmf/cl_material_assist=>mapping_inbound_002_qr`
 - `/dmf/cl_material_assist=>read_mrchds_price`
 - `/dmf/cl_material_assist=>mapping_outbound_002_qr`

Enhancements

The `/DMF/SE_FND_MRCHNDSTDM002` Business Add-In (BAI) is available for this operation. The BAI is used to enhance the inbound and outbound messages, and it is defined as an external customer BAI. A default implementation is not delivered.

More Information

Supplementary components are not relevant for the *Find Merchandise Supply Planning and Price by Elements* operation.

8.7.9 Retail Offer Management

Technical Data

Table 123:

Entity Type	Process Component

Software Component Version	ESM TDM 1.2
Technical Name	RetailOfferManagement
Namespace	http://sap.com/xi/ESM/TDM

8.7.10 Organizational Management

Definition

Contains the provision of a central and a unified organizational structure of the enterprise and its collaborative partners.

Technical Data

Table 124:

Entity Type	Process Component
Software Component Version	ESM TDM 1.2
Technical Name	OrganisationalManagement
Namespace	http://sap.com/xi/ESM/ERP

Business Context and Use

The [Organizational Management](#) process component contains organizational information.

8.7.10.1 Functional Unit

Definition

An organizational center.

Technical Data

Table 125:

Entity Type	Business Object
Software Component Version	ESM TDM 1.2
Technical Name	FunctionalUnit
Object Category	Master Data Object

Business Context and Use

The *Functional Unit* business object provides the organizational center responsible for the planning, execution, and administration of business process steps.

8.7.10.1.1 Functional Unit Replication In

Definition

An interface to receive the functional unit data.

Technical Data

Table 126:

Entity Type	Service Interface
Category	SAP A2A
Direction	Inbound

Business Context and Use

The *Functional Unit Replication In* service interface contains an operation that receives the functional unit data.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.
- You have ensured that the logical system has been defined in Customizing under **► Cross-Application Components ► Demand Data Foundation ► Basic Settings ► Define Logical Systems ►**. For more information, see the Customizing activity documentation (transaction **SPRO**).
- DDF receives the data through an eXtensible Markup Language (XML) message. The data is saved in DDF. For more information, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB> **► <Version> ► Application Help ► SAP Customer Activity Repository ► Demand Data Foundation ► Integration Information ► Inbound Processing ►**.

8.7.10.1.1.1 Replicate Functional Unit ERP Supply Chain as Bulk

Definition

To replicate the functional unit data of the supply chain view.

Technical Data

Table 127:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released
Technical Name	FunctionalUnitERPSupplyChainReplicationBulkRequest_In
Namespace	http://sap.com/xi/RTLDMF/Global2
Category	SAP A2A
Direction	Inbound
Mode	Asynchronous
Idempotency	Not applicable

Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Replicate Functional Unit ERP Supply Chain as Bulk* service operation is used to replicate the functional unit of the supply chain data.

Features

The inbound operation replicates the functional unit.

Message Types

- Functional Unit ERP Supply Chain Replication Bulk Request

8.7.11 Point of Sale Transaction Processing

Definition

Point of Sale Transaction Processing enables a company to receive, process and analyze point of sale data. It includes aggregation and forwarding capabilities.

Technical Data

Table 128:

Software Component	RTLPOSDM
Technical Name	PointOfSaleTransactionProcessing
Namespace	http://sap.com/xi/RTLPOSDM

Business Context and Use

This process component enables you to send retail, financial, and goods movement transactions that are performed in a retail store to SAP Customer Activity Repository. Once in SAP Customer Activity Repository, transactions can be analyzed, aggregated and forwarded to subsequent processes.

Notes on SAP Implementation

To use the `Point of Sale Transaction Processing` process component:

- SAP Customer Activity Repository must be configured for use according to the business requirements of the customer
- You must be using the `CA-RT-CAR-PIP` application component

More Information

[Point Of Sale Transaction \[page 295\]](#)

8.7.11.1 Point of Sale Transaction

Definition

A `Point Of Sale Transaction` is a business activity that is performed in a retail store, usually at the point of sale.

A point of sale transaction can refer to any of the following:

- retail transaction
- financial transaction
- inventory movement transaction
- control transaction
- summary transaction

Technical Data

Table 129:

Software Component	RTLPOSDM
--------------------	----------

Technical Name	PointOfSaleTransaction
Object Category	Business Process Object

Business Context and Use

This business object enables you to send retail, financial, and goods movement transactions that are performed in a retail store to SAP Customer Activity Repository. Once in SAP Customer Activity Repository, transactions can be analyzed, aggregated and forwarded to subsequent processes.

Constraints and Integrity Conditions

Currently, inventory transactions and summary transactions are not supported in the service operations.

Notes on SAP Implementation

To use the `Point of Sale Transaction` business object:

- SAP Customer Activity Repository must be configured for use according to a customer's business requirements
- You must be using the `CA-RT-CAR-PIP` application component

More Information

[Point Of Sale Transaction In \[page 296\]](#)

[Point Of Sale Transaction Out \[page 301\]](#)

8.7.11.1 Point Of Sale Transaction In

Definition

An asynchronous inbound service interface to create point of sale transactions.

Technical Data

Table 130:

Category:	SAP A2A
Direction	inbound

Business Context and Use

The `Point Of Sale Transaction In` inbound service interface contains a bulk operation that can be used to create many point of sale transactions in SAP Customer Activity Repository with a single service call.

Point of sale transactions are transferred from the POS to the process component [Point Of Sale Transaction Processing \[page 294\]](#) for further processing such as analysis, aggregation and forwarding to subsequent processes.

Constraints and Integrity Conditions

The `Point Of Sale Transaction In` inbound service interface does not support the creation of inventory or summary transactions.

Notes on SAP Implementation

To use the `Point Of Sale Transaction In` service interface:

- SAP Customer Activity Repository must be configured for use according to the business requirements of the customer
- You must be using the `CA-RT-CAR-PIP` application component

More Information

[Create Point Of Sale Transaction as Bulk \[page 298\]](#)

8.7.11.1.1.1 Create Point of Sale Transaction as Bulk

Definition

To create point of sale transactions in bulk.

Technical Data

Table 131:

Software Component	RTLPOSDM
Release State	released
Technical Name	PointOfSaleTransactionERPBulkCreateRequest_In
Namespace	http://sap.com/xi/RTLPOSDM/Global2
Application Component	CA-RT-CAR-PIP
Related Web Service Definition	POSTrxERPBulkCRTRQ
Category	SAP A2A
Direction	inbound
Mode	asynchronous
Idempotency	not applicable
Change/Update Behavior	not applicable
P2P Communication Enabled	yes

Notes on Release State (Technical Data)

This operation is the successor to operation of the same name under namespace `http://sap.com/xi/BICONTENT/Global2`.

Business Context

The operation is used to create POS transactions that have been sent from a POS system in the retail sector to SAP Customer Activity Repository in bulk. This operation supports encryption of credit card data and credit-card-related data.

The corresponding outbound service of this operation resides in third-party component.

Features

The `Create Point of Sale Transaction as Bulk` inbound operation is available to create POS transactions that have been sent from a POS system to SAP Customer Activity Repository. The `Create Point of Sale Transaction as Bulk` is a bulk operation that can contain multiple POS transactions within a single message. It is also possible to mix different transaction types within a single message.

The implementation of this inbound operation allows posting of the following transaction types:

- Retail transactions, for example, sales, return, payment on account
- Financial transactions, for example, deposit, paid in, tender adjustment
- Control transactions, for example, cashier sign-on, close register, open store

Per single transaction, credit card data and credit-card-related data can be transferred in a single encrypted data segment.

The implementation of the inbound service is completely embedded in the existing SAP Customer Activity Repository infrastructure and environment and uses the API `/POSDW/CREATE_TRANSACTIONS_INT`, which is also called in RFC, BAPI, and IDoc processing. Therefore, the structure of the service operation is mapped to the importing parameter of table type `/POSDW/TT_TRANSACTION_INT`.

The business object [Point Of Sale Transaction \[page 295\]](#) is sent as input and describes a business activity as performed in a retail store (including retail transactions, financial movements, and goods movement).

Prerequisites

SAP Customer Activity Repository must be configured for use according to the business requirements of the customer (the implementation of this inbound service is embedded in the environment of SAP Customer Activity Repository). The Customizing settings required are the same as for other possible inbound interfaces and techniques such as IDoc, BAPI, or RFC.

Integration

There exists a mirrored test operation `PointOfSaleTransactionERPBulkCreateRequest_Out` under namespace `http://sap.com/xi/RTLPOSDM/Global2/Testing`.

Error Handling

Forward error handling (FEH) is not available.

As a result, any message that cannot get processed within the service implementation (for example, due to a mapping error) is rejected and a corresponding fault message is raised using `cl_proxy_fault=>raise`.

Constraints and Integrity Conditions

The operation cannot currently import inventory or summary transactions. This is currently only possible using IDoc, BAPI, and RFC interfaces.

Notes on SAP Implementation

Processing

The `Create Point of Sale Transaction as Bulk` operation is an alternative method of transferring POS transactions to SAP Customer Activity Repository. As a result, the following apply:

- Depending on the SAP Customer Activity Repository Customizing settings (transaction `/POSDW/IMG`) for the store sending the data, you can post the incoming data immediately or to use the SAP Customer Activity Repository inbound queue (transactions `/POSDW/QMON` and `/POSDW/QDIS`) to post the data in a separate processing unit or step.
If the SAP Customer Activity Repository inbound queue is used, the XML messages of the service can be identified in the queue monitor in the following fields:
 - Key: Carries the GUID of the message instance
 - Object Type: Displays `XML_DOC`
- Successfully processed POS transactions transferred using the `Create Point Of Sale Transaction as Bulk` operation can be monitored in the POS Workbench (transaction `/POSDW/MON0`). In the POS Workbench, it is not possible to identify which method was used to import the transactions into SAP Customer Activity Repository (that is, operation, IDoc, RFC, or BAPI).

Configuration

Values of codelists of GDTs are mapped to corresponding values of SAP Customer Activity Repository Customizing (criteria values of type 1 and type 2) to determine the PIPE category code. These Customizing settings are found under: [▶ SAP Customer Activity Repository ▶ POS Data Management ▶ POS Inbound Processing ▶ Integration with Other SAP Components ▶ SAP POS ▶ Definition of Values for Category Code Criteria ▶](#).

Enhancements

The `/POSDW/SE_POS_TRANSACTION_INBOUND` Business Add-In (BAI) is available for this operation under Enhancement Spot `/POSDW/SPOT_SE_POS_TRANSACTION`.

8.7.11.1.2 Point Of Sale Transaction Out

Definition

An asynchronous outbound service interface to confirm the creation of point of sale transactions in SAP Customer Activity Repository.

Technical Data

Table 132:

Category	SAP A2A
Direction	outbound

Business Context and Use

The is outbound service interface groups operations that send out confirmations of the creation of point of sale transactions in SAP Customer Activity Repository.

Constraints and Integrity Conditions

The `Point Of Sale Transaction Out` outbound service interface does not support the confirmation of creation of inventory or summary transactions.

Notes on SAP Implementation

To use the `Point Of Sale Transaction Out` service interface:

- SAP Customer Activity Repository must be configured for use according to the business requirements of the customer
- You must be using the `CA-RT-CAR-PIP` application component

More Information

[Request Loyalty Membership Activity Journal as Bulk \[page 302\]](#)

8.7.11.1.2.1 Request Loyalty Membership Activity Journal as Bulk

Definition

To send a mass request from SAP Customer Activity Repository to loyalty membership activity.

Technical Data

Table 133:

Software Component	RTLPOSDM
Release State	released
Technical Name	LoyaltyMembershipActivityJournalCRMBulkRequest_Out_V1
Namespace	http://sap.com/xi/RTLPOSDM/Global2
Application Component	CA-RT-CAR-PIP
Related Web Service Definition	/POSDW/CO_Ly1MbrshpActJrBkReq
Category	SAP A2A
Direction	outbound
Mode	asynchronous
Idempotency	no
P2P Communication Enabled	no

Notes on Release State (Technical Data)

This operation is the successor to operation of the same name under namespace `http://sap.com/xi/BICONTENT/Global2`.

The change to the XML namespace allows for optional P2P communication.

Business Context

The operation sends loyalty information from SAP Customer Activity Repository to SAP CRM. Loyalty information can be included at the header level or at the retail line item level of the POS transaction. Customizing settings determine how the service is filled.

Features

Initially, a transaction log (TLOG) containing loyalty information is sent to the SAP Customer Activity Repository. Once data is in SAP Customer Activity Repository, loyalty information within the TLOG can be sent to SAP CRM using the operation `Request Loyalty Membership Activity Journal as Bulk`. Loyalty points/amounts are aggregated based on the customer card number.

Different options are as follows:

- Send loyalty amount at header level
- Send loyalty points at header level
- Send loyalty amount at retail line item level
- Send loyalty points at retail line item level

Main nodes of the operation are as follows:

- `MemberParty`: Contains the customer loyalty card number
- `SalesDocumentReference`: Contains the transaction number, the store ID, and the loyalty amount
- `Point`: Contains loyalty points

Prerequisites

The system must call `Maintain Loyalty Membership Activity Journal` before using the `Request Loyalty Membership Activity Journal as Bulk` operation. This operation is not available in SAP Customer Activity Repository but is available in a system that uses the operation to create loyalty membership activity with the POS transaction details.

Error Handling

Forward error handling (FEH) is not available.

As a result, any message that cannot get processed within the service implementation (for example, due to a mapping error) is rejected and a corresponding fault message is raised using `cl_proxy_fault=>raise`.

Typical errors are as follows:

- Customizing is missing for loyalty data transfer
- A duplicate customer card number is found, which means no aggregation is done

- An empty customer card number is detected

Constraints and Integrity Conditions

The operation cannot currently support inventory or summary transactions.

Notes on SAP Implementation

The `Supply CRM Loyalty Interface` task in SAP Customer Activity Repository sends loyalty information to CRM component using the service interface. This task must be set up for the retail store that is being used.

Customizing settings, under [SAP Customer Activity Repository](#) > [POS Data Management](#) > [POS Inbound Processing](#) > [Integration with Other SAP Components](#) > [CRM Integration](#), determine which fields are mapped in the operation. Different options are as follows:

- Points from TLOG header level mapped to CRM
- Amount from TLOG header level mapped to CRM
- Points from TLOG line item level summed up mapped to CRM
- Amount from TLOG line item level summed up mapped to CRM

B2B And A2A Related Information

SAP Customer Activity Repository and SAP CRM are the back-end components that are involved. The corresponding inbound service of this operation resides in the SAP CRM component.

Processing

`LoyaltyMembershipActivityProfileCode` determines if points are redeemed or awarded. The redeemed scenario is not supported for the communication between SAP Customer Activity Repository to SAP CRM (offline scenario). Therefore the value is always 13 (POS ACCURAL). In the offline scenario, the 'TypeCode' under `SalesDocumentReference` is set to 903, which is related to POS transactions.

Asynchronous outbound operations only

POS Workbench (transaction `/POSDW/MONO`) can be used to send out the service interface.

Enhancements

The `/POSDW/SE_LOYALTY_OUTBOUND` Business Add-In (BAI) is available for this operation under Enhancement Spot `/POSDW/SPOT_SE_LOYALTY`.

8.7.12 Product Property Management

Definition

Manages product category hierarchies and product properties, along with their valuations.

Technical Data

Table 134:

Entity Type	Process Component
Software Component Version	ESM TDM 1.2
Technical Name	ProductPropertyManagement
Namespace	http://sap.com/xi/ESM/ERP

Business Context and Use

The *Product Property Management* process component enables information about the product category hierarchy.

8.7.12.1 Product Category Hierarchy

Definition

A hierarchical arrangement of product categories according to objective business aspects. Subordinate product categories represent a semantic refinement of the respective higher-level product category.

Technical Data

Table 135:

Entity Type	Business Object
Software Component Version	ESM TDM 1.2
Technical Name	ProductCategoryHierarchy
Object Category	Master Data Object

Business Context and Use

The *Product Category Hierarchy* business object provides the product category hierarchy.

8.7.12.1.1 Product Category Hierarchy Replication In

Definition

An interface to receive the product category hierarchy.

Technical Data

Table 136:

Entity Type	Service Interface
Category	SAP A2A
Direction	Inbound

Business Context and Use

The *Product Category Hierarchy Replication In* service interface contains an operation that receives the product category hierarchy.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.
- You have ensured that the logical system has been defined in Customizing under **► Cross-Application Components ► Demand Data Foundation ► Basic Settings ► Define Logical Systems ►**. For more information, see the Customizing activity documentation (transaction **SPRO**).
- DDF receives the data through an eXtensible Markup Language (XML) message. The data is saved in DDF. For more information, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB> **► <Version> ► Application Help ► SAP Customer Activity Repository ► Demand Data Foundation ► Integration Information ► Inbound Processing ►**.

8.7.12.1.1 Replicate Product Category Hierarchy

Definition

To replicate the product category hierarchy.

Technical Data

Table 137:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released
Technical Name	ProductCategoryHierarchyReplicateRequest_In
Namespace	http://sap.com/xi/RTLDMF/Global2
Category	SAP A2A
Direction	Inbound
Mode	Asynchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Replicate Product Category Hierarchy* service operation is used to replicate the product category hierarchy.

Features

Message Types

- ProductCategoryHierarchyReplicateRequest_V1

8.7.12.1.2 Query Product Category Hierarchy In

Definition

An interface to search for product category hierarchies.

Technical Data

Table 138:

Entity Type	Service Interface
Category	SAP A2A
Direction	Inbound

Business Context and Use

The *Query Product Category Hierarchy In* service interface contains an operation that is used by an external application to request the product category information.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.
- You have ensured that the logical system has been defined in Customizing under **► Cross-Application Components ► Demand Data Foundation ► Basic Settings ► Define Logical Systems ►**. For more information, see the Customizing activity documentation (transaction **SPRO**).

8.7.12.1.2.1 Find Product Category Hierarchy by Elements

Definition

To find a product category hierarchy by elements.

Technical Data

Table 139:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released
Technical Name	ProductCategoryHierarchyTDMByElementsQueryResponse_In
Namespace	http://sap.com/xi/RTLDMF/Global2
Category	A2X
Direction	Inbound
Mode	Synchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Find Product Category Hierarchy by Elements* service operation is used to allow an external application to provide search parameters and receive the product category information.

Features

Message Types

- `ProductCategoryHierarchyTDMByElementsQuery_sync`
Receives data for the product hierarchy search. This type can contain data for the hierarchy ID and the description.
- `ProductCategoryHierarchyTDMByElementsResponse_sync`
Returns the hierarchy data, which is based on the search criteria from the inbound message. When the input parameter (hierarchy ID or description) is not provided for the query, the system returns the default product category hierarchy with its respective nodes.
- `StandardMessageFault`

Notes on SAP Implementation

- The generated proxy in Demand Data Foundation (DDF) is the `/DMF/CL_FND_PCHTDM001QR` ABAP class. The proxy data type is used in DDF for the `/DMF/FND_PCH_ELMNTS_QUERY_MSG` incoming query message and the `/DMF/FND_PCH_ELMNTS_RSP_MSG` response message.
- DDF uses the Service Mapping Tool (SMT) for the inbound message mapping (`DMF/CL_PROD_CAT_HIER_SMT Mapping` field). No other Customizing settings are required.
- If you do not select the *Unlimited* checkbox and send 0 (zero) as the maximum value, the system takes the upper limit as 1.

Enhancements

The `/DMF/SE_FND_PCHTDM001QR` Business Add-In (BAI) is available for this operation.

The BAI contains the `/DMF/IF_SE_FND_PCHTDM001QR` interface with the `INBOUND_PROCESSING` and `OUTBOUND_PROCESSING` methods.

The `INBOUND_PROCESSING` method is called during the inbound data mapping and can be used in the following cases:

- To overwrite the existing mapping.
- To map additional data if new elements were added to the message.

The `/DMF/CO_PCH_SELBYELMNTS_MDT` internal communication structure is used as the importing parameter of this method.

The `OUTBOUND_PROCESSING` method is called during the outbound data mapping and can be used in the following cases:

- To overwrite the existing mapping.
- To map additional data if new elements were added to the message.

The `/DMF/FND_CPGH_ELEM_RESP` internal communication structure is used as importing parameter of this method.

The Service Mapping Tool (SMT) allows you to enhance the inbound and outbound mapping. To enhance the mapping, you must select the `/DMF/CL_PROD_CAT_HIER_SMT` application as the entry point.

More Information

Supplementary components of the `ProductCategoryHierarchyTDMByElementsQuery_sync` inbound message are not relevant for implementing this service.

8.7.13 Source of Supply Determination

Definition

Determines the access to sources of supply and quota arrangements for external and internal procurement processes.

Technical Data

Table 140:

Entity Type	Process Component
Software Component Version	ESM TDM 1.2
Technical Name	SourceOfSupplyDetermination
Namespace	http://sap.com/xi/ESM/ERP

Business Context and Use

The *Source of Supply Determination* process component is used for the external and internal procurement of products. It contains a business relationship for producing products or procuring them internally, as well as size margins and costs.

8.7.13.1 Source of Supply

Definition

A source for internal and external procurement.

Technical Data

Table 141:

Entity Type	Business Object
Software Component Version	ESM TDM 1.2
Technical Name	SourceOfSupply
Object Category	Master Data Object

Business Context and Use

The *Source of Supply* business object provides the transportation lane information. This business object contains product-specific purchasing information per store and supplying location. The supplying location can be a distribution center or an external vendor.

8.7.13.1.1 Source of Supply Replication In

Definition

An interface to receive the source of supply data.

Technical Data

Table 142:

Entity Type	Service Interface
Category	SAP A2A
Direction	Inbound

Business Context and Use

The *Source of Supply Replication In* service interface contains an operation that receives the source of supply data.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.
- You have ensured that the logical system has been defined in Customizing under **► Cross-Application Components ► Demand Data Foundation ► Basic Settings ► Define Logical Systems** **►**. For more information, see the Customizing activity documentation (transaction **SPRO**).
- DDF receives the data through an eXtensible Markup Language (XML) message. The data is saved in DDF. For more information, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB> **► <Version> ► Application Help ► SAP Customer Activity Repository ► Demand Data Foundation ► Integration Information ► Inbound Processing** **►**.

8.7.13.1.1 Replicate Source of Supply as Bulk

Definition

To replicate the source of supply data.

Technical Data

Table 143:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released
Technical Name	SourceOfSupplySUITEReplicationBulkRequest_In
Namespace	http://sap.com/xi/RTLDMF/Global2
Category	SAP A2A
Direction	Inbound
Mode	Asynchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Replicate Source of Supply as Bulk* service operation is used for the external and internal procurement of products. It contains a business relationship, an option for producing products or procuring them internally, as well as size margins and costs.

Features

The operation creates, updates, and deletes the data.

The operation contains the following main nodes:

- External Location Identifier for the Target Location
- Target Location Type
Determines the target location type. Note that the type of the target location is important to distinguish among different target locations, as the target locations can sometimes have the same ID.
- External Location Identifier for the Supplying Location
- Source Location Type
Determines the source location type. Note that the type of the source location is important to distinguish among different source locations, as the source locations can sometimes have the same ID.
- External Product Identifier
- Source Location Sub-Range
Describes how the source location (especially an external vendor) categorizes the merchandise. The total range of products for a source location is divided into different categories (for example, dairy products, frozen products, and canned products).
- Merchandise Category
Describes how the retailer categorizes the merchandise. This category is similar to Source Location Sub-Range, but with the focus on the receiving location.
- Purchasing Organization
Contains the purchase organization. A location can be assigned to more than one purchasing organization; therefore, the purchasing organization is mandatory.
- Sending System Identifier
Logical system
- Source of Supply Type
Distinguishes between an internal and an external procurement.
- External Product Identifier used by Vendor
- Purchasing Cost per Order Unit of Measure
Contains the net purchasing price per order unit of measure. Multiple units of measure per order are supported. The purchasing currency must be provided, because different vendors may have different settlement currencies. This element is mandatory.
- Priority per Source of Supply
Defines different priorities per source of supply because a product can be purchased by different supplying locations.
- Validity Time Frame for Source of Supply
Contains the validity time frame for the source of supply because a certain product might only be purchased for a certain period of time at a given source of supply.
- ERP Purchasing Info Record Number
This element is used for the A2X communication with the SAP ERP application to create purchase orders. In the use case for promotions, this element is required to simulate the creation of a purchase order. This simulation determines the exact price information, such as reflecting scales and freight. The final creation of the purchase order overwrites the price of the purchasing info record (vendor fund with special conditions).

Message Types

- Source of Supply SUITE Replication Bulk Request

Error Handling

The *Replicate Source of Supply as Bulk* operation supports Forward Error Handling (FEH).

Notes on SAP Implementation

- The Interface Workbench receives all data coming through an Extensible Markup Language (XML) message. The relevant tables for this process component are as follows:
 - /DMF/MDIF_LANE
 - /DMF/MDIF_LANEPC
 - /DMF/MDIF_LANEED
- The generated proxy in Demand Data Foundation (DDF) is the /DMF/CL_FND_SOSSRPLCTBLKRQ ABAP class. The proxy data type is used in DDF for the /DMF/FND_SOSSRPLCTN_BLK_REQ incoming bulk replication message.
- The Service Implementation Workbench (SIW) is used to implement the service back-end system. The SIW uses the /DMF/II_FND_SOSSRPLCTBLKRQ project ID configuration name and the /DMF/CL_FND_SOSSRPLCTBLKRQ_SI generated service implementation class.
- DDF uses the Service Mapping Tool (SMT) for the inbound message mapping (/DMF/CL_SOS_SMT [Mapping](#) field).

Enhancements

The /DMF/SE_FND_SOSSRPLCTBLK Business Add-In (BAI) is available for this operation. The BAI contains the /DMF/IF_SE_FND_SOSSRPLCTBLK interface with the INBOUND_PROCESSING method. The BAI definition is auto-generated by the SIW tool.

8.7.13.2 Query Source of Supply In

Definition

An interface to search for sources of supply.

Technical Data

Table 144:

Entity Type	Service Interface
Category	SAP A2A
Direction	Inbound

Business Context and Use

The *Query Source of Supply In* service interface contains an operation that is used to read the transportation lane data.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.
- You have ensured that the logical system has been defined in Customizing under ► *Cross-Application Components* ► *Demand Data Foundation* ► *Basic Settings* ► *Define Logical Systems* . For more information, see the Customizing activity documentation (transaction **SPRO**).
- If you do not select the *Unlimited* checkbox and send 0 (zero) as the maximum value, the system takes the upper limit as 1.

8.7.13.2.1 Find Source of Supply by Elements

Definition

To find a source of supply by elements.

Technical Data

Table 145:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released
Technical Name	SourceOfSupplyTDMByElementsQueryResponse_In
Namespace	http://sap.com/xi/RTLDMF/Global2
Category	A2X

Direction	Inbound
Mode	Synchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Find Source of Supply by Elements* service operation is used to read the transportation lane data.

Features

Message Types

- `SourceOfSupplyTDMBByElementsQuery_sync`
 Receives data for the transportation lane search. This type can contain data for the following:
 - `SellerPartyID`
 - `ReceivingLocationID`
 - `MaterialID`
 - `ProductSellerID`
 - `ProductCategoryID`
- `SourceOfSupplyTDMBByElementsResponse_sync`
 Returns data for the transportation lane search, product procurement cost data, and time-dependent data based on search criteria from the inbound message. At least one of the following parameters must be provided for the query:
 - `SellerPartyID`
 - `ReceivingLocationID`
 - `MaterialID`
 - `ProductSellerID`
 - `ProductCategoryID`

The output is based on the AND operation for all input parameters provided.

- `FaultMessage`

Notes on SAP Implementation

- The generated proxy in Demand Data Foundation (DDF) is the `/DMF/CL_FND_SOSTDM001QR` ABAP class. The proxy data type is used in DDF for the `/DMF/FND_SOS_ELEMENTS_QUERY` request message and the `/DMF/FND_SOS_ELEMENTS_RSP` response message.
- The Service Implementation Workbench (SIW) is used to implement the service back-end system. The SIW uses the `/DMF/II_FND_SOSTDM001QR` project ID configuration name and the `/DMF/CL_FND_SOSTDM001QR_SI` generated service implementation class.
- DDF uses the Service Mapping Tool (SMT) for the inbound message mapping (`/DMF/CL_SOSQR_SMT` [Mapping](#) field).
- If you do not select the [Unlimited](#) checkbox and send 0 (zero) as the maximum value, the system takes the upper limit as 1.

The method calls are as follows:

- `/dmf/cl_sos_assist=>mapping_inbound_qr`
- `/dmf/cl_ext_lane=>lane_m_read`
- `/dmf/cl_sos_assist=>mapping_outbound_q`

Enhancements

The `/DMF/SE_FND_SOSTDM001QR` Business Add-In (BAI) is available for this operation. The BAI is used to enhance the inbound message, and it is defined as an external customer BAI. A default implementation is not delivered.

More Information

Supplementary components are not relevant for implementing this service.

8.7.14 Vendor Fund Management

Definition

Manages the vendor fund information.

Technical Data

Table 146:

Entity Type	Process Component
Software Component Version	ESM TDM 1.2
Technical Name	VendorFundManagement
Namespace	<code>http://sap.com/xi/ESM/TDM</code>

Business Context and Use

The *Vendor Fund Management* process component is used to manage the vendor fund provided by vendors to motivate retailers to promote their products.

8.7.14.1 Vendor Fund

Definition

A financial incentive provided by a vendor to motivate a retailer to promote the vendor's products or product groups.

Technical Data

Table 147:

Entity Type	Business Object
Software Component Version	ESM TDM 1.2
Technical Name	VendorFund
Object Category	Business Process Object

Business Context and Use

The *Vendor Fund* business object provides the vendor fund information.

8.7.14.1.1 Vendor Fund In

Definition

An interface to receive the vendor fund.

Technical Data

Table 148:

Entity Type	Service Interface
Category	Third-Party A2A
Direction	Inbound

Business Context and Use

The *Maintain Vendor Fund* service interface contains an operation that receives the vendor fund information.

Notes on SAP Implementation

- You have ensured that the Demand Data Foundation (DDF) module in SAP Customer Activity Repository has been installed and implemented. Applications using DDF require additional installation and implementation steps. For more information, see the *Common Installation Guide* for your release. You can find this guide on SAP Help Portal for SAP Customer Activity Repository retail applications bundle at <https://help.sap.com/viewer/p/CARAB>.
- You have ensured that the logical system has been defined in Customizing under **► Cross-Application Components ► Demand Data Foundation ► Basic Settings ► Define Logical Systems**. For more information, see the Customizing activity documentation (transaction **SPRO**).
- DDF receives the data through an eXtensible Markup Language (XML) message. The data is saved in DDF. For more information, see SAP Help Portal at <https://help.sap.com/viewer/p/CARAB> **► <Version> ► Application Help ► SAP Customer Activity Repository ► Demand Data Foundation ► Integration Information ► Inbound Processing**.

8.7.14.1.1.1 Maintain Vendor Fund

Definition

To replicate the vendor fund.

Technical Data

Table 149:

Entity Type	Service Operation
Software Component	RTLDDF
Release State	Released
Technical Name	VendorFundRequest_In
Namespace	http://sap.com/xi/RTLDMF/Global2
Category	Third-Party A2A
Direction	Inbound
Mode	Asynchronous
Idempotency	Not applicable
Change/Update Behavior	Type 1
P2P Communication Enabled	True

Business Context and Use

The *Maintain Vendor Fund* service operation is used to replicate vendor fund information, such as the discount offered on products by a vendor to a retailer.

Features

Message Types

- Vendor Fund Request

8.8 Appendix

8.8.1 Transaction Log (TLOG) Data Model and Storage

POS data is captured in a format called a Transaction Log (TLOG). TLOGs capture all the attributes of a store's sales transaction. This information is used to log many attributes about the sale, such as customer information,

sales price, discount price, quantities, item descriptions, and much more. Such information is used in backend store systems for sales auditing, reporting, and input in to additional Retail planning applications.

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

Business Transactions

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

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

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

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

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

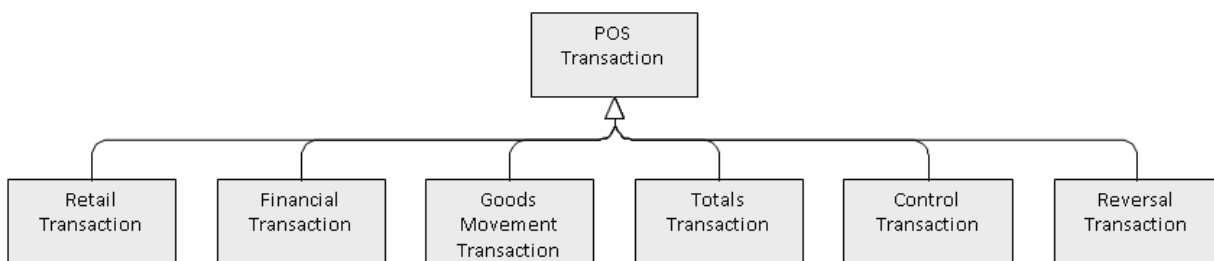


Figure 8: Business Transaction Types for POS Transactions

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

Common Segments

Transaction Header

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

The transaction header contains the following information:

Table 150: Transaction Header Fields

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

Field Name	Description	Role in SAP Customer Activity Repository	Role at POS	Data Type/Length
Transaction Index	A counter that uniquely identifies POS transactions for the same store and same business day. This field is available only in SAP Customer Activity Repository and has no representation in the external interfaces or at the POS.	Key	-	Integer/4
Transaction Type Code	A four-digit code used to indicate the type of POS transaction.	Mandatory Attribute	Mandatory Attribute	Char/4
Workstation ID	A number that identifies the cash register or machine where the POS transaction was entered.	Optional Attribute	Key	Char/10
Transaction Number	A number used to identify a POS transaction. In SAP Customer Activity Repository, the key fields (store, business day, workstation ID, transaction type code, and transaction number) do not need to be unique because SAP Customer Activity Repository uses a counter at the database level. However, the key field combination must be unique at the POS.	Optional Attribute	Key	Char/20

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

Field Name	Description	Role in SAP Customer Activity Repository	Role at POS	Data Type/Length
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 Customer Activity Repository Customizing. However, for tender totals, the field is mandatory as there can be totals for different currencies.	Attribute	Optional attribute	Char/5
Partner ID Qualifier	This field indicates if the transaction is from a customer or business partner.	Optional Attribute	Optional Attribute	Char/1
Partner ID	It is used to store the SAP customer number, SAP personnel number, or a free text value.	Optional Attribute	Optional Attribute	Char/13

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

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

Post Void Details

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

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

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

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

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

Extensions

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

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

For more information, see Extensibility and Extensions.

Transactional Additional

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

Retail Transactions

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

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

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

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

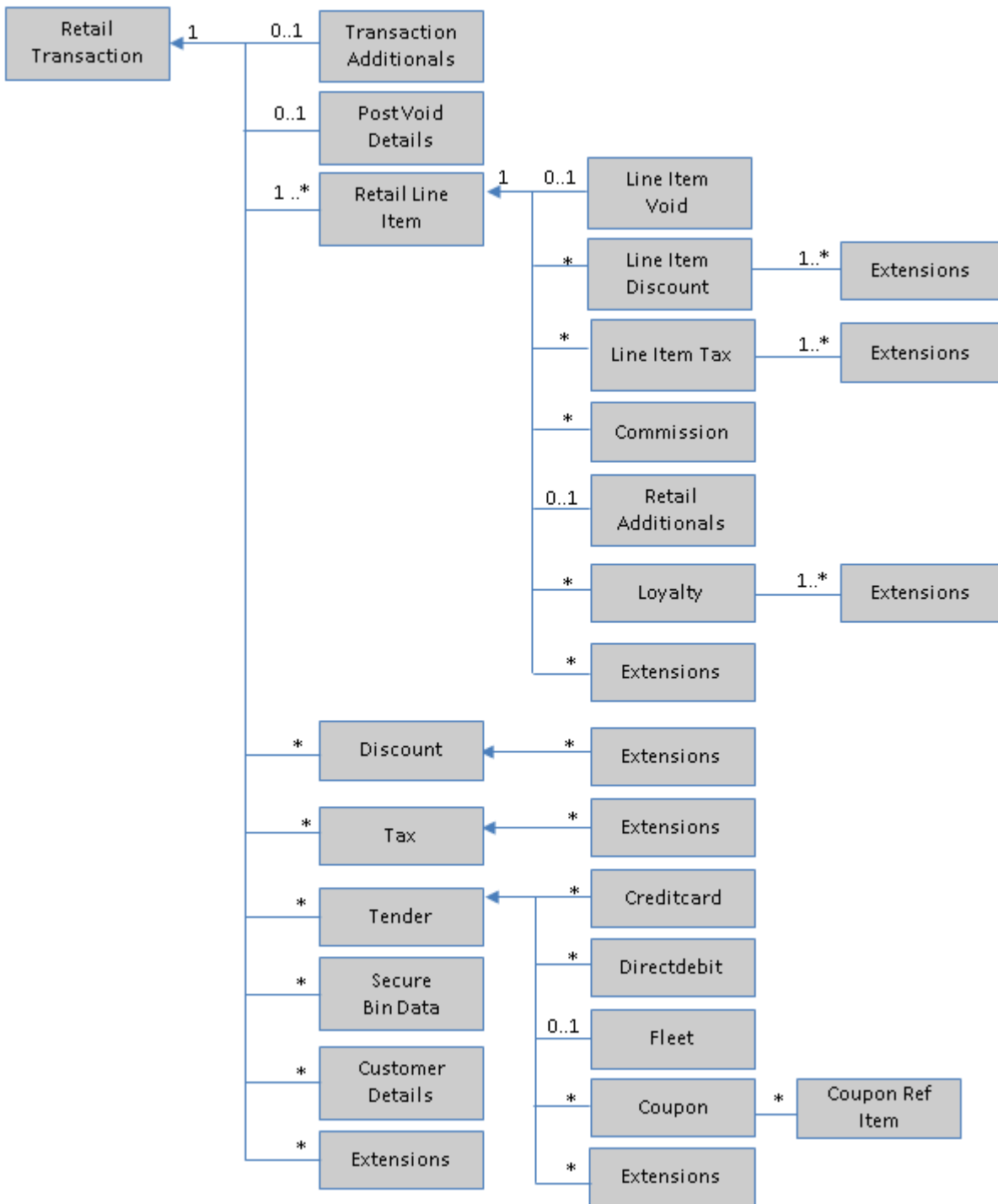


Figure 9: Structure of a Retail Transaction

Totals Transactions

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

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

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

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

The summary information has different purposes:

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

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

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

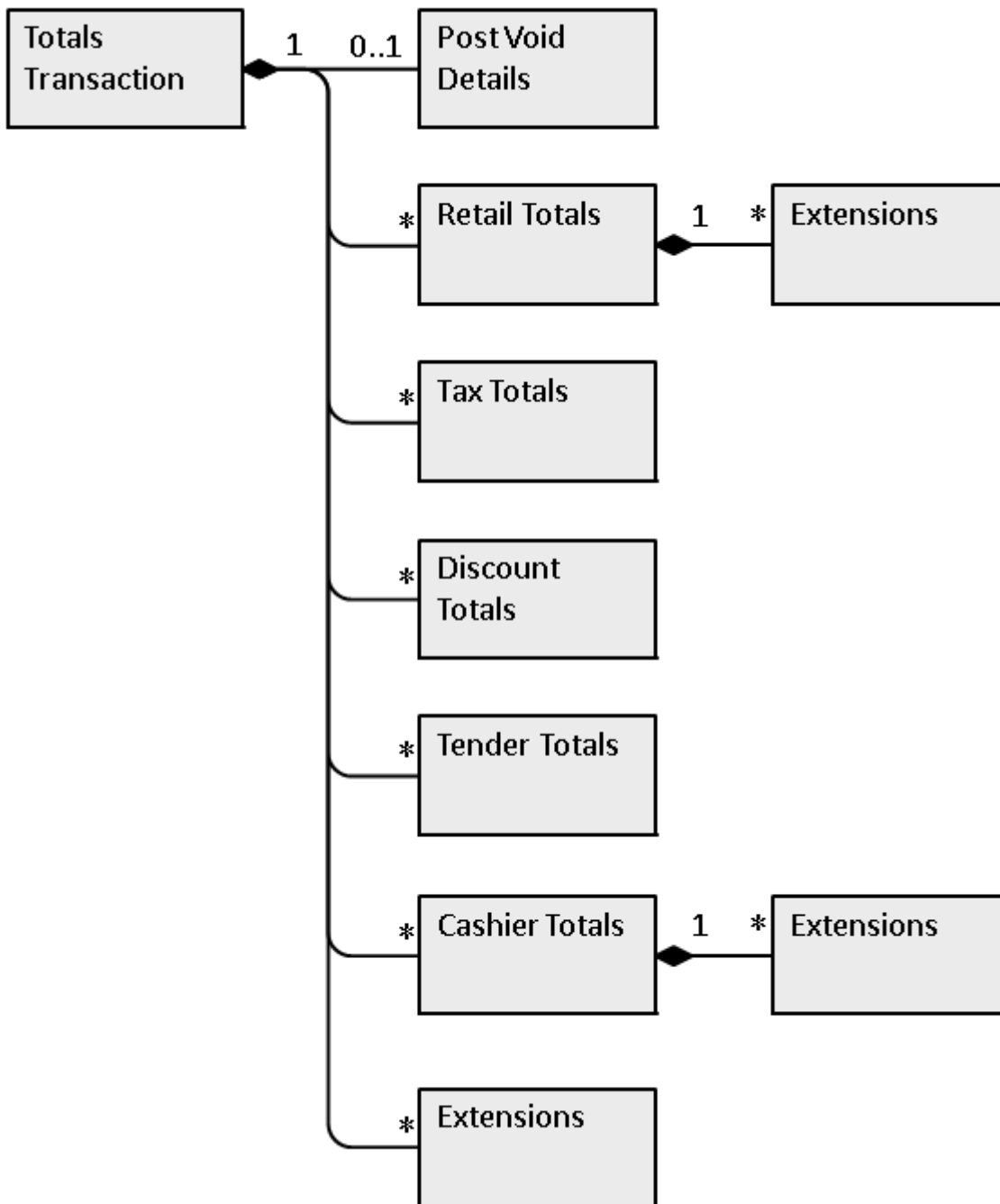


Figure 10: Structure of a Totals Transaction

Goods Movements

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

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

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

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

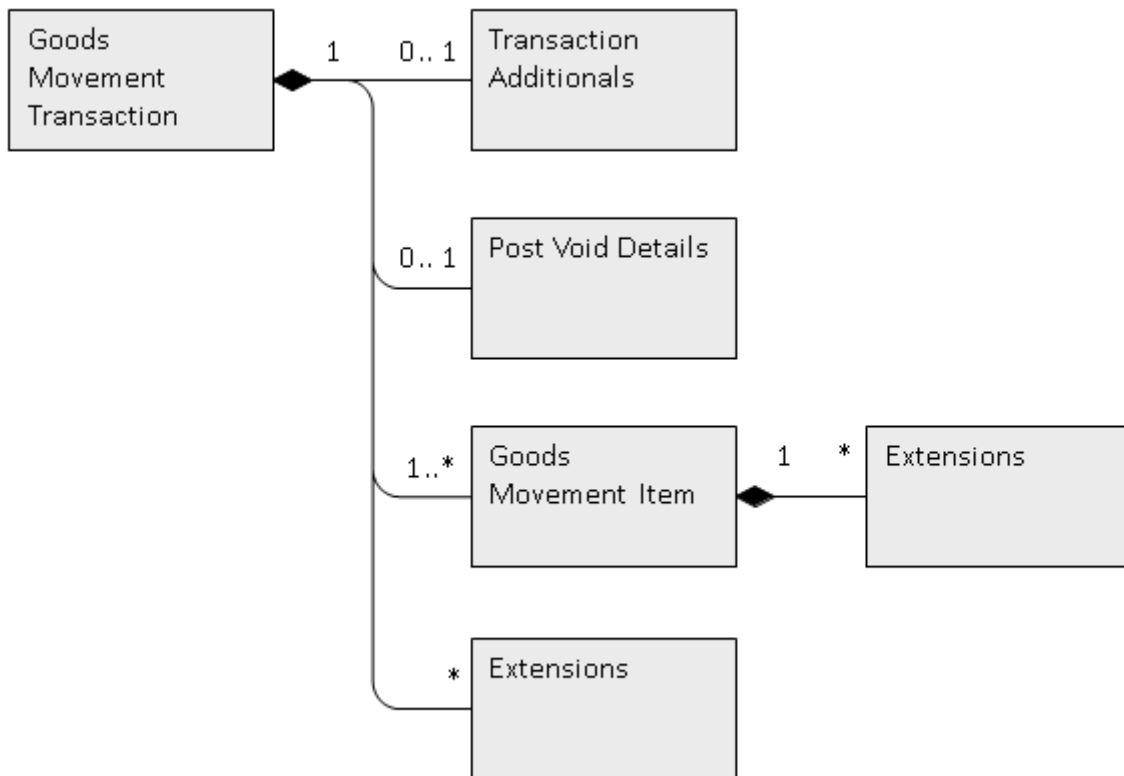


Figure 11: Structure of a Goods Movement Transaction

Financial Movements

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

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

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

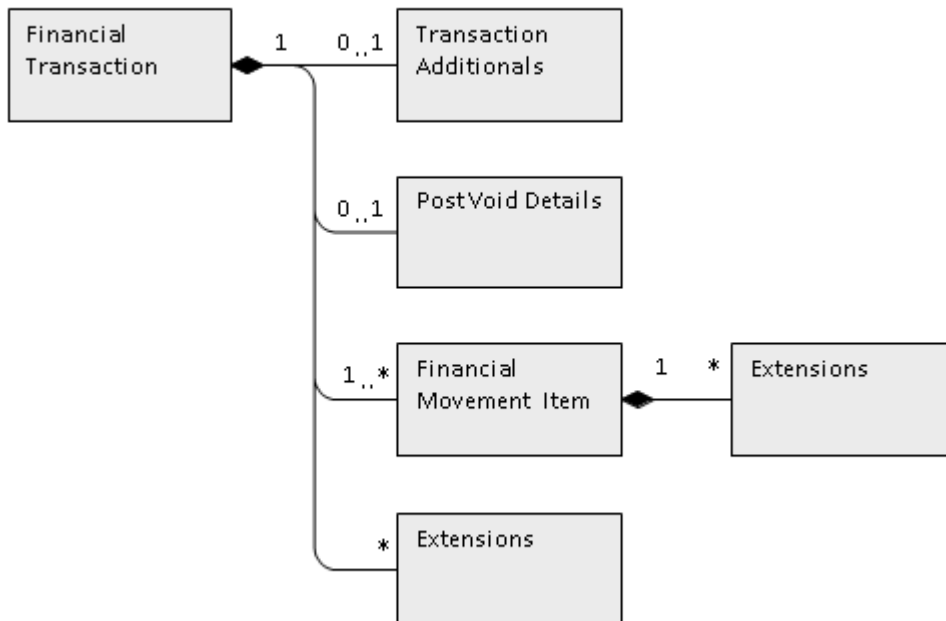


Figure 12: Structure of a Financial Movement Transaction

Control Transactions

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

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

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

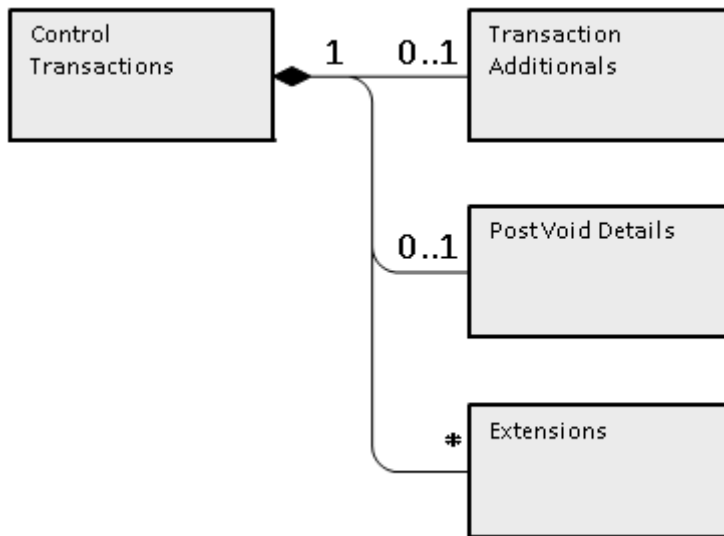


Figure 13: Structure of a Control Transaction

Post Void Transactions

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

There are two possible post void scenarios:

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

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

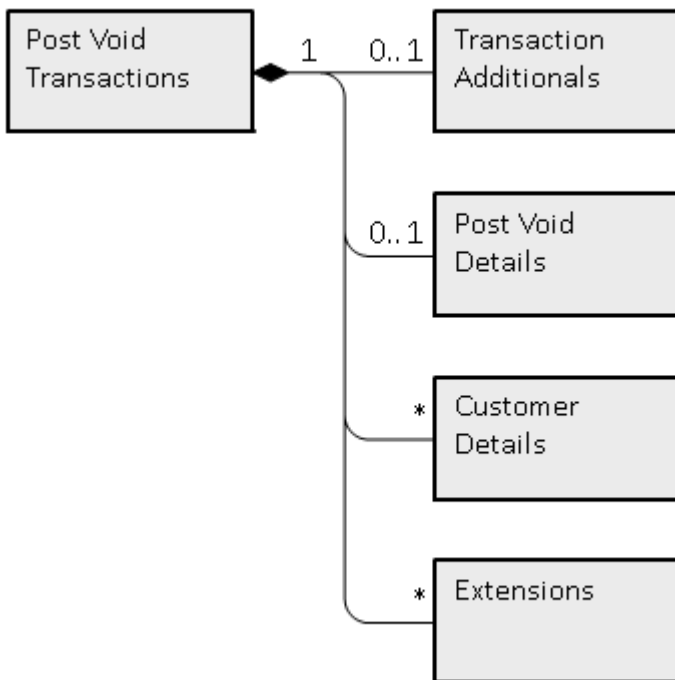


Figure 14: Post Void Transactions

POS Transaction Tables (/POSDW/TLOGF)

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

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

/POSDW/TLOGF Table

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

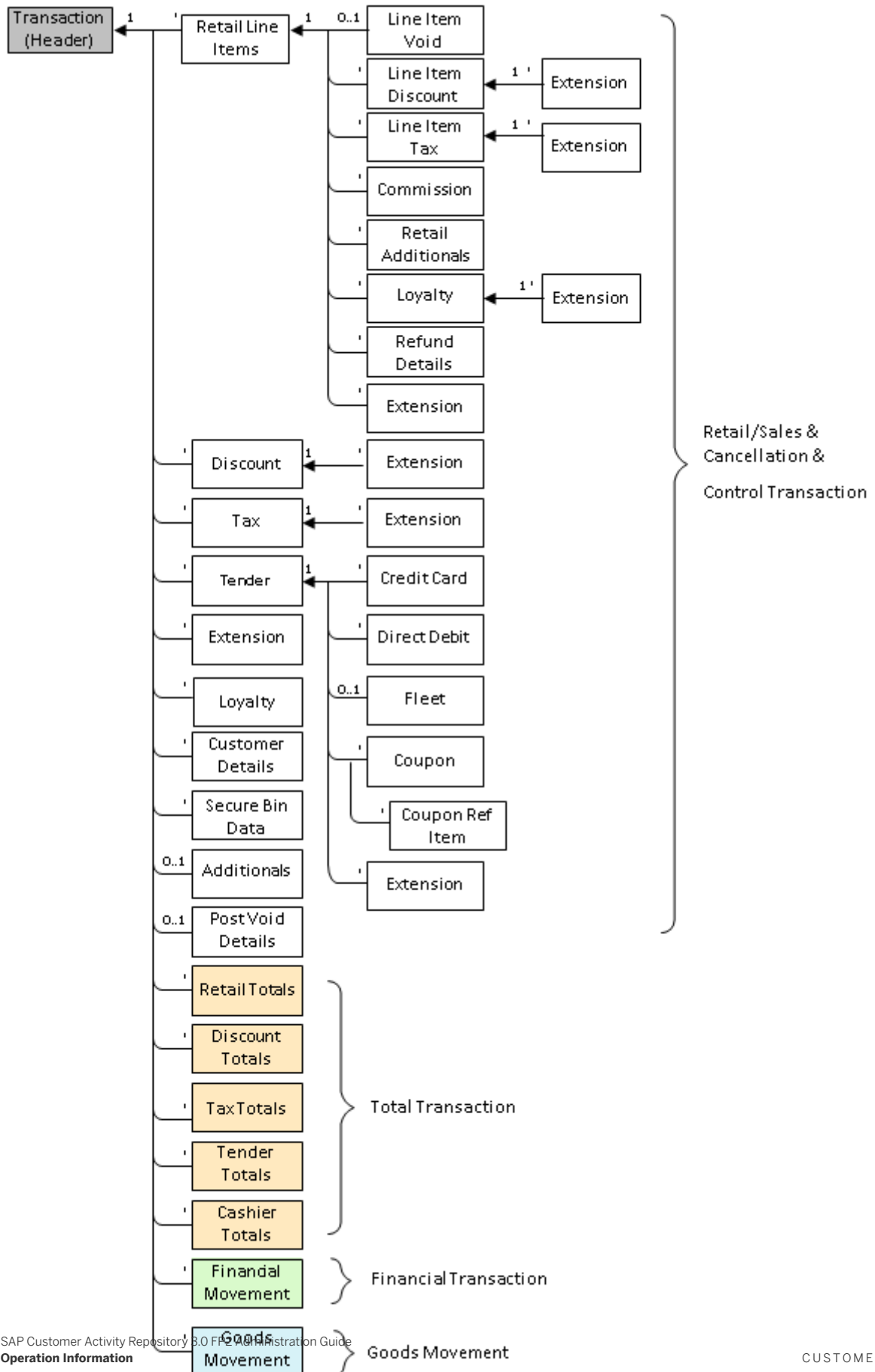


Figure 15: POS Transaction Structure

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

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

Flattening the TLOG Data Model into /POSDW/TLOGF

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

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

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

Table 151: Record Qualifiers

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

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

8.8.2 Extensibility and Extensions

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

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

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

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

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

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

Figure 16: /POSDW/EXTENSIONS Structure

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

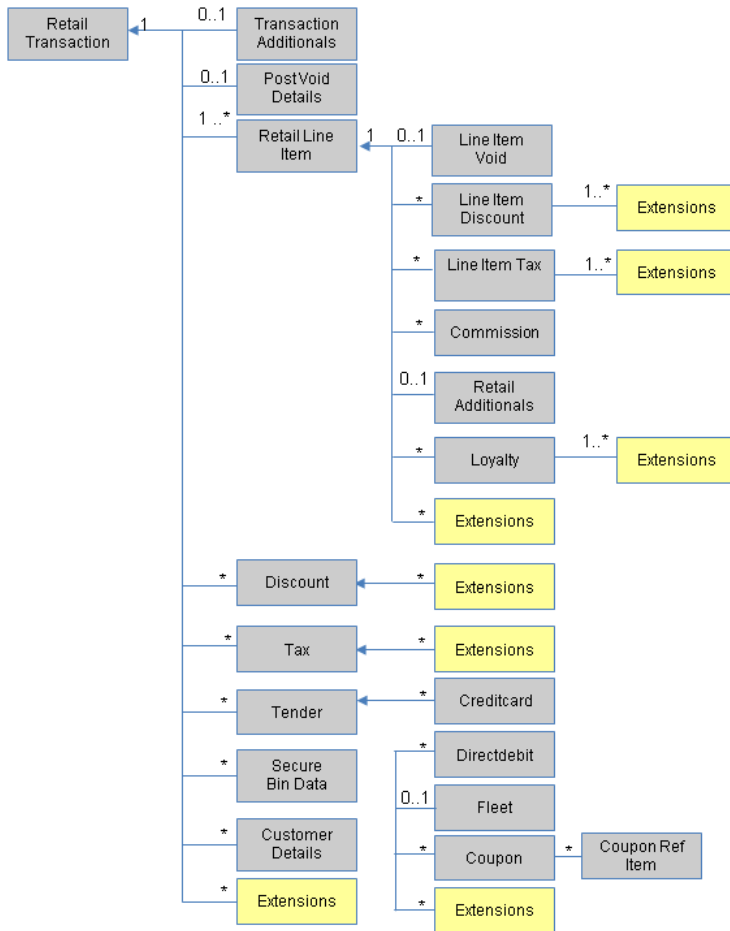


Figure 17: Extension Level Details

Extensions and the Physical Data Storage

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

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

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

MANDT	RETAILSTOREID	BUSINESSDAYDATE	TRANSINDEX	ROWKEY	PARENTKEY	RECORDQUALIFIER	TRANSTYPECODE	FIELDGROUP	FIELDNAME	FIELDVALUE
100	R100	01.10.2012	1	0	0	1	1001	COMNT	CASHIER	Customer was happy about sale on jeans

Figure 18: Example in /POSDW/TLOGF table

Storing Extension Segments in a Separate Table

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

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

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

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

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

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

Mapping Extension Segments

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

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

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

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

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

i Note

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

8.8.3 TLOG API

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

- / POSDW/READ_TLOG

- /POSDW/WRITE_TLOG
- /POSDW/SEARCH_TLOG

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

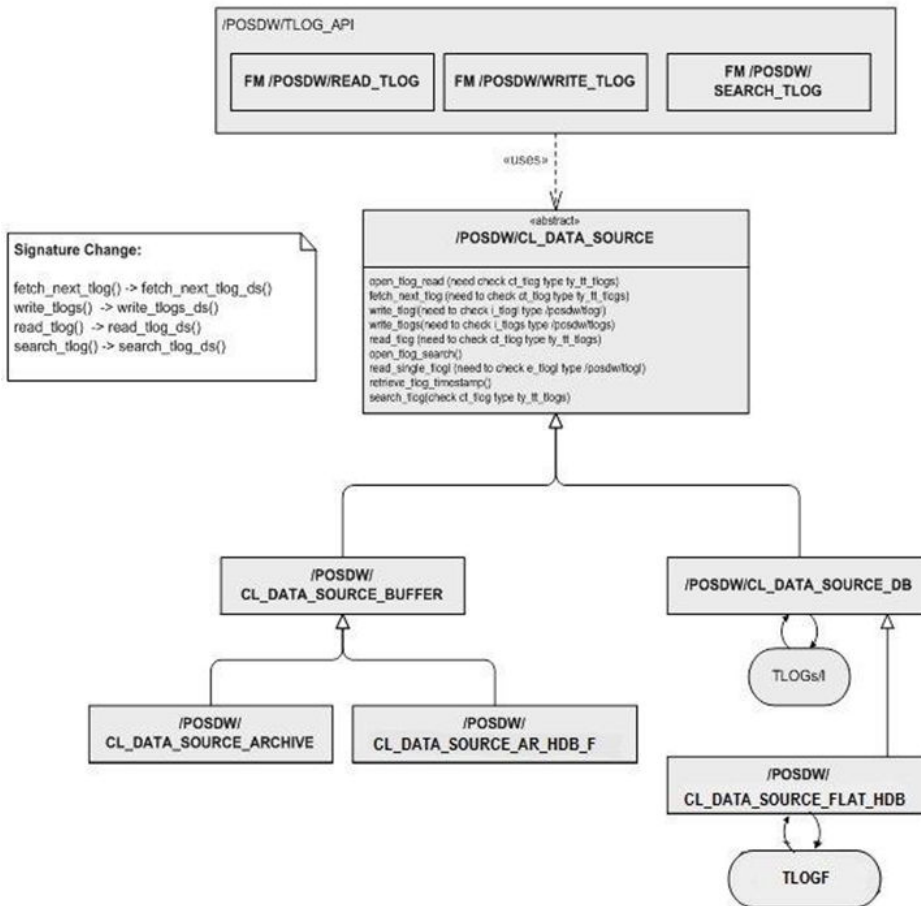


Figure 19: Structure of TLOG_API

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

Table 152: APIs used for the /POSDW/TLOGF Table

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

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

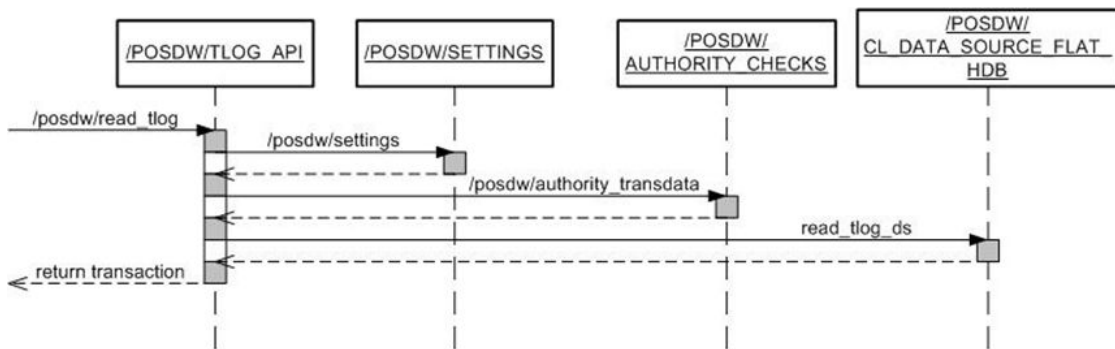


Figure 20: Sequence Diagram for /POSDW/READ_TLOG Operation

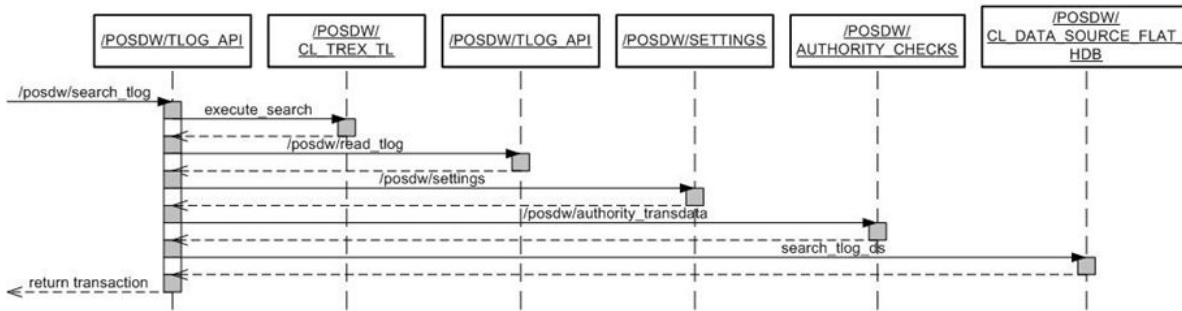


Figure 21: Sequence Diagram for POSDW/SEARCH_TLOG Operation

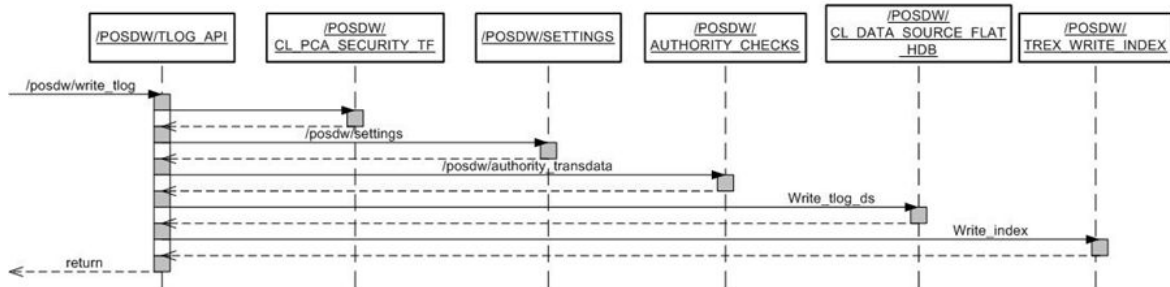


Figure 22: Sequence Diagram for /POSDW/WRITE_TLOG Operation

Enhanced Fields

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

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

Analytic Fields

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

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

Table 153: /POSDW/TLOGF Analytic Fields

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

Entity Relationships

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

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

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

Extensibility

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

Structures

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

Table 154: Structures of SAP POS Data Management Component in SAP Customer Activity Repository

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

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

Table Types

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

Table 155: Table Types of SAP POS Data Management Component in SAP Customer Activity Repository

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

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