Configuration Guide | INTERNAL – Authorized for SAP Customers and Partners
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Integration Guide for SAP S/4HANA Billing and Revenue Management Using Subscription Order Management

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Content

Document History

Version	Changes
1.0	Initial Version
1.1	Update reflecting changes and enhancements in Subscription Order Management with SAP S/4HANA 1909 FPS01 The following chapters were added: • Payment Card Data in Subscription Items • Locking and Unlocking of Subscription Contracts • Changing Inactive Contracts • Customer Hierarchies in Master Agreement • Price Agreements in Master Agreements • Products in Master Agreements • Sharing Contracts The ODI Customizing schema and steps for locking and unlocking were added to the “Order Document Distribution (ODI)” chapter.

Version	Changes
1.2	Update reflecting changes and enhancements in Subscription Order Management with SAP S/4HANA 2020 The following chapters were added: • Fiori Apps for Subscription Order Management [page 15] • Product Replication [page 19] • Recurring charges in SAP CC [page 30] • Automatic Renewal of Subscription Contracts [page 43] • Contract Changes After Advance Payments [page 43] • Partner Settlement with Convergent Invoicing [page 76] • DaaS – Equipment Integration with Subscription Items [page 78] • Table Extensibility of Subscription Order and Subscription Contract [page 92] The following chapters were enhanced: • Business Roles for Subscription Order Management [page 12] • Products [page 17] • Order Document Distribution (ODI) [page 49] • Account Split [page 66]
1.3	Update reflecting changes and enhancements in Subscription Order Management with SAP S/4HANA 2020 FPS1 The following chapters were added: • Detailed Billing [page 29] • Material Variants in Subscription Scenario [page 38] • Executing Group of Changes Together [page 44] • Change Process Based Price Determination [page 45] • Contract Transfer [page 45] • Change Quotation [page 59] • APIs in Subscription Order Management [page 93]

1 Purpose

This document is intended as the central starting point for the integration of the components comprising Billing and Revenue Innovation Management (BRIM). It gives you an overview of the end-to-end process and guides you through the activities that are necessary to connect the components that make up the BRIM scenario landscape. The document lists all required activities for technical and process integration.

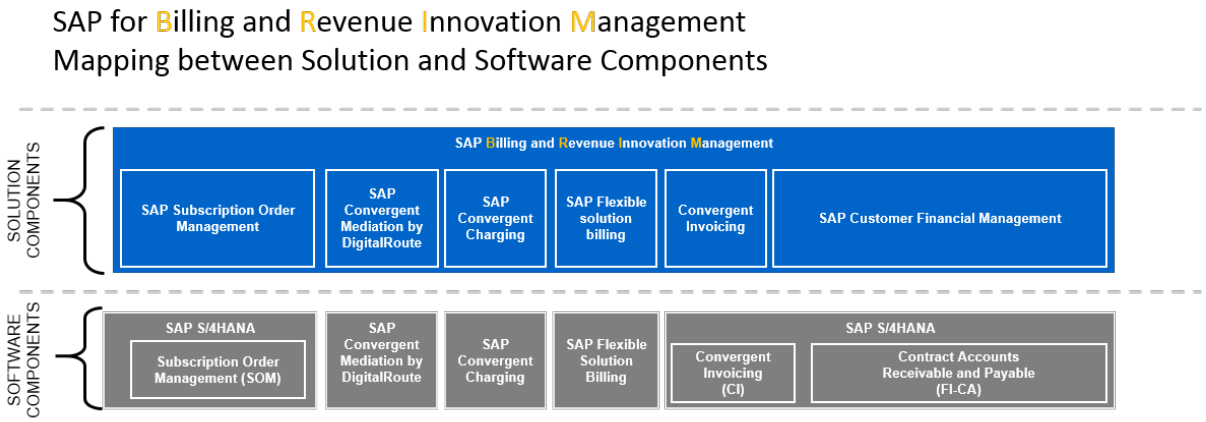
For more detailed information, see the overview page for BRIM at https://help.sap.com/BRIM and the Product Assistance of Billing and Revenue Innovation Management.

2 The BRIM End-to-End Process

SAP S/4HANA Billing and Revenue Innovation Management (BRIM), is designed to streamline your high-volume revenue management processes and consists of the following components:

- SAP S/4 HANA containing the Subscription Order Management, Convergent Invoicing, and Receivables Management and Payment Handling capabilities
- SAP Convergent Charging
- SAP Convergent Mediation by DigitalRoute

The following graphic illustrates the components of SAP for Billing and Revenue Innovation Management.



Solution Overview of the SAP for Billing and Revenue Innovation Management Components

While SAP Convergent Charging and SAP Convergent Mediation by DigitalRoute each represent separate products, the Subscription Order Management, Convergent Invoicing, and Receivables Management and Payment Handling capabilities are part of BRIM in SAP S/4HANA and can be used in combination with the following industry solutions:

- SAP for Telecommunications
- SAP Utilities
- SAP Public Sector Collection and Disbursement (PSCD)

SAP S/4HANA Billing and Revenue Innovation Management is modular, so you have the option of deploying single elements within your existing IT software landscape.

3 Prerequisists

The scenario supports the following release combinations of its components:

SAP S/4HANA	SAP Convergent Charging
SAP S/4HANA 2020 FSP1 or higher	SAP CC 5.0 SP 4 or higher

> **i Note**
>
> This guide covers the integration with the product scope of the releases of SAP S/4HANA and SAP CC as mentioned in the table above.
>
> This guide deals only with the functionality provided by Subscription Order Management in SAP S/4HANA and its integration in related components.
>
> This guide does not cover the Fulfillment process, that is, Sales and Distribution, Logistics, 3rd party service provisioning and activation, and workforce management.

> **⚠ Caution**
>
> If you are using this guide while integrating SAP S/4HANA 1909 FPS0 with SAP CC, you must implement SAP Note 2824632 first. If you do not implement this SAP Note, the distribution of subscription contracts to Contract Accounts Receivable and Payable (FI-CA) will run into a deadlock situation. In this situation the provider contract returns an error while the status of the subscription contract remains in *Waiting*. In this situation it is not possible to re-trigger the distribution. This situation does not occur if you integrate SAP S/4HANA 1909 FPS1 or higher.

Depending on the industry solution you are using, the following business function sets and business functions must be activated in the S/4 HANA system:

Industry	Business Function Set / Business Functions
SAP Telecommunications	Business function set SAP Telecommunications (TELCO) with all its business functions
SAP Contract Accounts Receivable and Payable (FI-CA)	Business function set SAP Contract Accounts Receivable and Payable (FICAX) with all its business functions

Industry	Business Function Set / Business Functions
SAP Utilities	The following business functions of business function set Industry Solution for Utilities (UTILITIES): • ISU_UTIL_1 • ISU_UTIL_WASTE • ISU_LOC_CI_1 • ISU_CA_1 • ISU_CA_2 • ISU_CA_3 • ISU_CA_3B • ISU_CA_3E • ISU_CA_3G • ISU_INV_1 • ISU_INV_2 • ISU_INV_2B • ISU_INV_2F • ISU_INV_2G • ISU_INV_2H • ISU_INV_2J • ISU_INV_2K • ISU_INV_PP_1 • ISU_INV_PP_2 • ISU_INV_PP_3 • ISU_INV_PP_3A • ISU_INV_PP_3D • ISU_INV_PP_3E

Industry	Business Function Set / Business Functions
SAP Public Sector Collection and Disbursement	The following business functions of business function set Industry Extension SAP for Public Sector (PUBLIC_SERVICES): • PSCD_COLLECTIONS_MANAGEMENT • PSCD_COLLECTIONS_MANAGEMENT_1 • PSCD_COLLECTIONS_MANAGEMENT_2 • PSCD_COLLECTIONS_MANAGEMENT_3 • PSCD_COLLECTIONS_MANAGEMENT_3C • PSCD_COLLECTIONS_MANAGEMENT_3D • PSCD_COLLECTIONS_MANAGEMENT_4 • PSCD_COLLECTIONS_MANAGEMENT_4B • PSCD_COLLECTIONS_MANAGEMENT_4E • PSCD_COLLECTIONS_MANAGEMENT_4F • PSCD_COLLECTIONS_MANAGEMENT_4G • PSCD_COLLECTIONS_MANAGEMENT_5 • PSCD_INV_PP_1 • PSCD_INV_PP_1D • PSCD_INV_PP_1E

If you are using SAP Telecommunications or SAP Contract Accounts Receivable and Payable (FI-CA) and want to use Financial Customer Care and Dispute Management, the business functions CRM_FCA_1 and CRM_FCA_2 must be activated in the CRM system.

If you are using SAP Utilities and want to use Financial Customer Care and Dispute Management, the business function CRM_UT_ER_2 must be activated in the CRM system.

For more information on how to use Financial Customer Care und Dispute Management, also see746475

4 Business Roles for Subscription Order Management

Users access the functions comprising Subscription Order Management via the Fiori Launchpad and the WebClient UI. The following business roles are available:

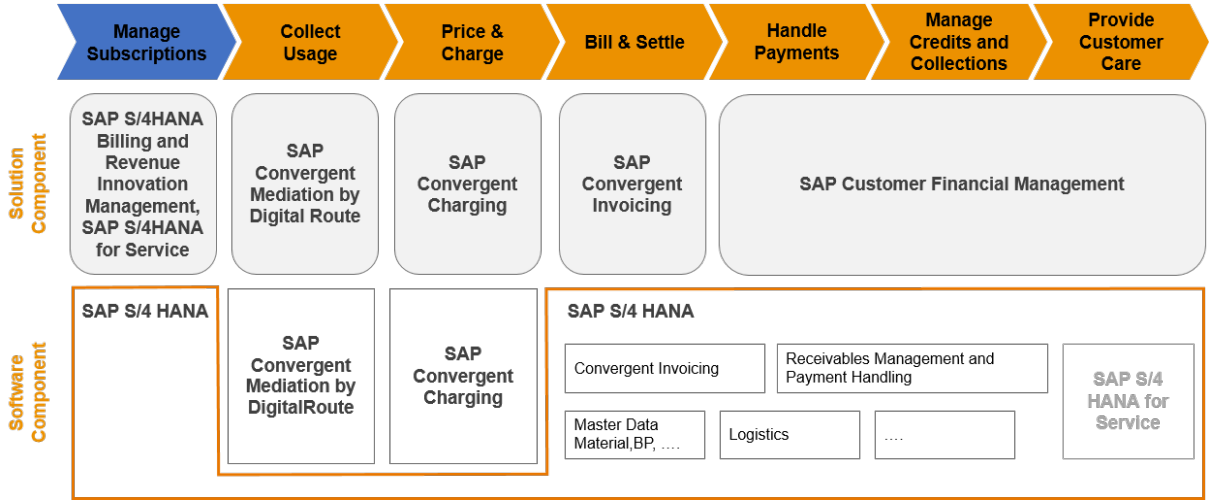
Business Role	System	Purpose
SAP_S4C_UIU_SOM_REP	Back end server	For the internal sales representative role (`S4C_SOM_REP`) in the WebClient UI
SAP_S4C_UIU_SOM_PROD	Back end server	For the product modeler role (`S4C_SOM_PROD`) in the WebClient UI
SAP_SOMPROD_MANS1_APP	Back end server	For working with the *Manage Subscription Product-Specific Data* Fiori app
SAP_BR_PROD_CONF_MODELR_SOM	Frontend server	Controls the Launchpad for the product modeler.
SAP_BR_INTRNAL_SALESREP_SOM	Frontend server	Controls the Launchpad for order and contract management.
SAP_ALLWNCDEF_MANS1_APP	Back end server	For working with the *Manage Allowance Definition Groups* Fiori app
SAP_SHRNGGRP_MANS1_APP	Back end server	For working with the *Manage Sharing Groups* Fiori app

For more details, refer to the SAP S/4HANA Security Guide.

> **i Note**
>
> The technical profile **DEFAULT** is assigned to the business role **S4C_SOM_REP**. The runtime framework profile setting for **DEFAULT** must have the **Disp.Mode** indicator set in Customizing under *Service* > *UI Framework* > *UI Framework Definition* > *Maintain Runtime Framework Profile.*

5 Subscription Order Management Process and Feature Overview

The following graphic illustrates how Subscription Order Management is embedded as a solution and software component in Billing and Revenue Innovation Management (BRIM) in SAP S/4HANA.



Subscription Order Management Process and Feature Overview

SAP CC represents a separate product. Subscription Order Management and Convergent Invoicing represent capabilities of SAP S/4HANA. Contract Accounts Receivable and Payable (FI-CA) is represented by the Receivables Management and Payment Handling capability inside SAP S/4HANA.

Subscription Order Management enables customers to offer their business solutions as a combination of products and subscriptions to services (recurring fees, usage-based charges, and one-off charges), based on consumption pricing model (pay-per-use pricing models).

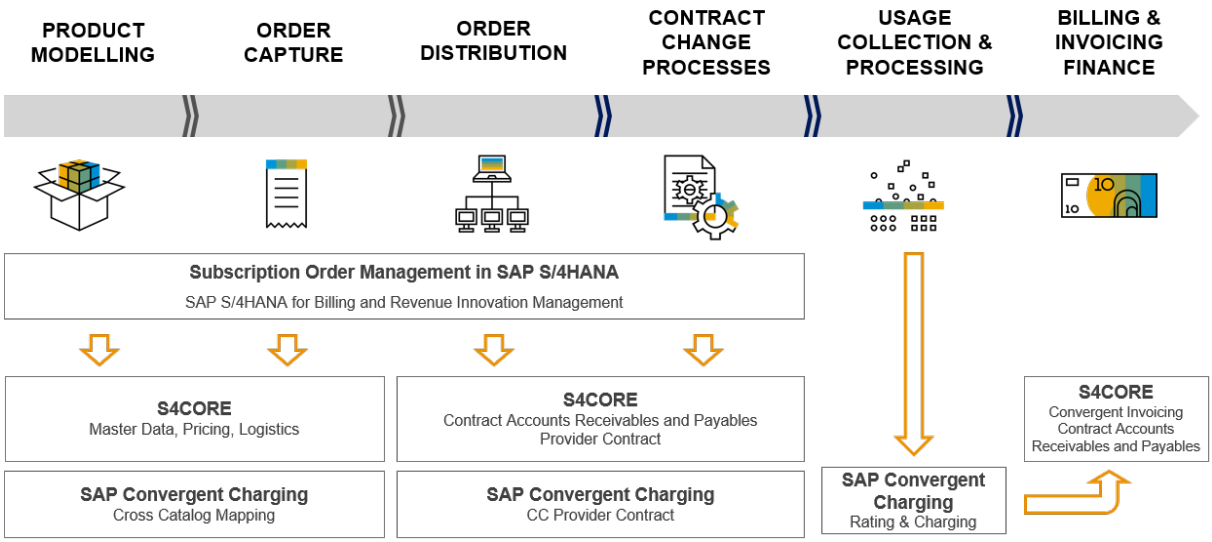
Subscription Order Management has the following features:

- **Product Modeling**
  You can model and manage products and product bundles consisting of various combination of sales products and subscription products. You can define subscription products as recurring fees, one-off charges, or usage-based products.
  For each product, you define prices.
  You model charge plans in SAP CC and assign the cross-catalog mapping version (CCM) to usage-based products.
  During product modelling you can redefine parameters, mapping tables, and range tables should the need arise.
- **Order Capture**
  You manage subscription orders and track the status of the order processing.
  You create SD sales order and subscription contracts as follow-up documents of subscription orders
- **Revenue Sharing**

If your business model requires you to share revenue with your partners, you can handle partner agreements where you can manage the conditions that were negotiated with your partners. Management of partner agreements is very similar to the handling of subscription contracts for end customers.

- **Data Distribution**
  The subscription contract is distributed among the SAP S/4HANA components involved and SAP CC as provider contract.
  For subscription products with recurring fees you define billing plans in Convergent Invoicing or you use charge plans in SAP CC.
  Document Distribution is done via ODI which offers features for monitoring and scheduling order and contract distribution.
- **Contract Changes**
  There is a change process in place to maintain subscription contracts throughout their lifecycle. Contract changes update provider contracts in Contract Accounts Receivable and Payable (FI-CA) and SAP CC based on change process type.
- **Usage Processing and Update of Revenue Accounting and Reporting**
  Subscription Order Management is integrated with SAP CC, Contract Accounts Receivable and Payable (FI-CA) and Convergent Invoicing covering usage processing, billing, invoicing and accounting. Convergent Invoicing Updates Revenue Accounting and Reporting.

The following figure illustrates the features mentioned above while showing the integration points and components involved.



Processing Subscriptions - Integration and Component View

6 Fiori Apps for Subscription Order Management

The following Fiori Apps are available for Subscription Order Management:

- *Manage Subscription Product-Specific Data* (app ID F3560)
- *Manage Allowance Definition Groups* (app ID F4028)
- *Manage Sharing Groups* (app ID F4432)
- *Manage Product Master Data* (app ID F1602)
- *Manage Prices - Sales* (app ID F4111)

For details about the apps, enter the Fiori-ID in the SAP Fiori Apps Reference Library.

To activate the OData services and set the system alias, proceed as follows:

- To use the Fiori apps, activate the OData services on the Fiori server and assign a system alias (transaction `/IWFND/MAINT_SERVICE`).
  As an alternative, you can use the task list for the Fiori content activation. For more information, please see Rapid Activation for SAP Fiori in SAP S/4HANA.
- Activate the relevant business roles and transport them with task list `SAP_FIORI_CONTENT_ACTIVATION` (transaction `STC01`).

For information about the business roles available, please see Subscription Order Management on the Fiori Launchpad [page 16].

For Subscription Order Management, the following OData services are available:

- `CRMS4_SOM_PROD_SPEC_SRV` (Manage Subscription Product-Specific Data)
- `CRMS4_SOM_SHGR_SRV` (Manage Sharing Groups)
- `CRMS4_SOM_ADG_SRV` (Manage Allowance Definition Groups)

In addition, you have to active and configure the following services for the product master data (see 2405092):

- `MD_C_PRODUCT_MAINTAIN_SRV` (Manage Product Master Data)
- `LO_VCHCLF` (Variant Configuration and Classification Service)
- `CV_ATTACHMENT_SRV` (Gateway: ODATA model for CV - attachments)
- `SD_PRICING_CONDITIONRECORD_SRV` (SD Pricing Condition Record)

Related Information

SAP Note 2902673
SAP Note 2813396

7 Subscription Order Management on the Fiori Launchpad

For information on how to set up the launchpad, please see SAP Fiori Launchpad.

To get access to the launchpad content, the following **business roles** must be assigned to the user:

- `SAP_BR_INTRNAL_SALESREP_SOM` (Internal Sales Representative (SOM); role ID R0080SOM)
- `SAP_BR_PROD_CONF_MODELR_SOM` (Product Configuration Modeler (SOM); role ID R0241SOM)

Fiori Launchpad catalogs comprise the content, displayed on the Fiori Launchpad. The technical catalogs represent the basic collection of all Fiori Launchpad settings required to display tiles and the navigation (target mapping) between the tiles and apps and between apps.

Technical backend catalogs comprise all tiles and navigation information for SAP GUI, WebUI, and WebDynpro apps. Subscription Order Management provides the technical backend catalog `SAP_TC_S4CRM_SOM_BE_APPS` (SAP CRM - Subscription Order Management: Classic Apps) for SAP GUI, WebUI, and WebDynpro apps.

If you use a separate Fiori frontend server, the technical backend catalog must be replicated to the Fiori frontend server on the frontend server by using the `/UI2/GET_APP_DESCR_REMOTE_DEV` report.

The technical catalog `SAP_TC_SOM` (Subscription Order Management - Technical Catalog) is available for Subscription Order Management.

Business Catalogs are assigned to business roles. They are used for providing and structuring the content on the Fiori Launchpad. It is required to accessing apps and for the navigation between the apps (tiles and target mappings). The content of the catalogs itself mentioned below is referenced from the following technical catalogs mentioned before.

- `SAP_SOM_BC_SUBSCR_PROD` (Subscription Product)
- `SAP_SOM_BC_SUBSCR_ORDER` (Subscription Order Management)

8 Products

Subscription orders support the following types of products:

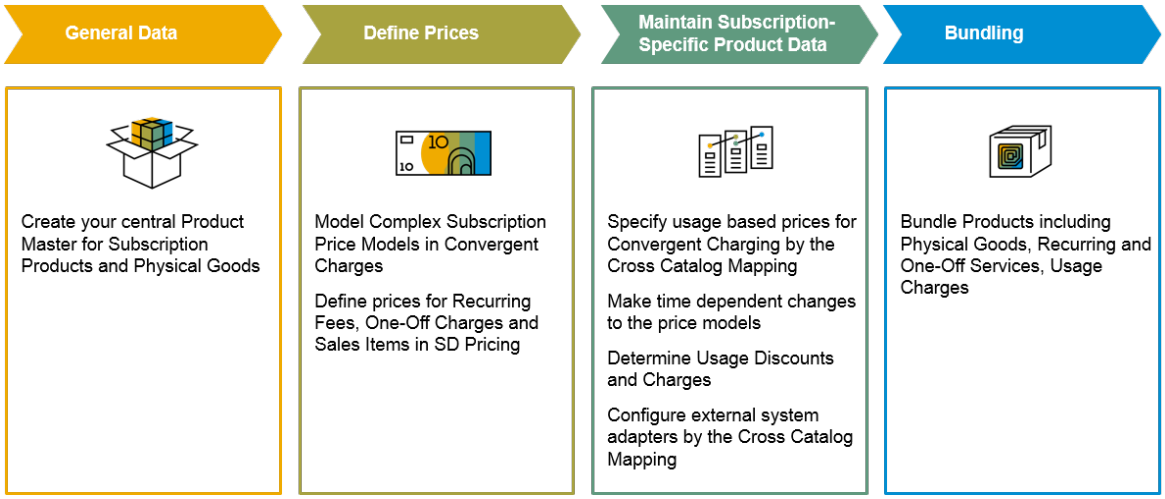
- **Subscription Products**
  Subscription products are used when a business partner subscribes to a service. Fees and charges can be managed in different ways.
  - Usage-based subscription products to be billed based on usage
  - Recurring subscription products which shall be billed based on bill cycle, for example, monthly, yearly
  - One-time fees such as activation fee for a contract

  > **i** Note
  >
  > There is a specific product type group 3 (Subscription) to be assigned to the material type in Customizing *Logistics - General* > *Material Master* > *Basic Settings* > *Material Types* > *Define Attributes of Material Types.*
  >
  > Subscription specific data can be maintained only for the products which belong to the material types which are mapped to product type group 3.
  >
  > Material types `SUBS` (Subscription Product), `SUBC` (Subscription Sharing Product), and `SUBP` (Subscription Partner Prd.) were pre-delivered with the product type group 3.
  >
  > Product role Customizing is required for the subscription products. The Customizing is maintained in *Service* > *Master Data* > *Settings for Subscription Master Data* > *Subscription Product-Specific Data* > *Assign Product Roles to Product Types.*

  As a prerequisite for creating subscription-specific product data the central product master must exists. Product master has also been enhanced with a set of fields such as contract duration, contract extension, billing cycle, assignment schema for the product type group 3 (subscription). You create products with the *Manage Product Master Data* app delivered with the `SAP_BR_PRODMASTER_SPECIALIST` business role. Subscription product-specific data such as cross-catalog mapping, discounts and charges are maintained in the products using the *Manage Subscription Product-Specific Data* app (business role `SAP_BR_PROD_CONF_MODELR_SOM`).
- **Physical Goods**
  Physical goods are represented as sales items resulting in an SD sales order to support logistical processes such as delivery or goods issue.
- **Bundles**
  Bundles can combine different types of products to be sold together and to offer specific prices for the bundle components. The main item is represented by the bundle product with the bundle components represented as its sub-items. When you bundle products you assig the bundle components to the bundle product. A bundle product (main item) can be a subscription package or sales package that is determined based on the product role assigned to the product type of the bundle product in Customizing *Service* > *Master Data* > *Settings for Subscription Master Data* > *Subscription Product-Specific Data* > *Assign Product Roles to Product Types*.

> **i Note**
>
> Product types for bundles you define in Customizing under *Service* > *Master Data* > *Products* > *Product Bundles* > *Define Product Types for Bundle Products*. You group bundle components in Customizing under *Service* > *Master Data* > *Products* > *Product Bundles* > *Define Component Groups for Product Bundles*.

As a prerequisite for creating bundles the bundle product and individual bundle components must exist as the central product master. You maintain bundles with the *Manage Product Bundles* app delivered with the `SAP_BR_PROD_CONF_MODELER_SOM` business role. Alternatively, you can maintain bundles using the the role product configuration modeler `S4C_SOM_PROD - Product Modeler` in the Web Client UI.
The following figure shows the phases of product modeling in the product configuration modeler:



User Journey in the Product Configuration Modeler

During product modeling, you can assign BRFplus rules to the bundle components. The system then determines the bundle component based on the assigned BRFplus rule at run-time . To set up business rules for product bundles, you use the BRFplus application `CRMS4_CFG_SC` (solution configurator). For more information, please see Product Bundles.

- **Prices of Products**
  Prices are determined using SD pricing which delivers the *PSMB (Monthly Subscr Fee)* and *PSPB (Bundle Price)* condition types. You maintain prices in transaction `VK11`. The following key combinations are provided to maintain prices:
  - Master agreement specific price: *Doc. Cat./ID/ItmNo. Doc/Material*
  - Duration-based price with main material optional: *Sales Org./Distr. Chl/MnItm PRM/Material/Dura/Time unit*
  - Price based on main material (bundle specific price): *SOrg/DstCh/Material_MainItem/Material*
  - Direct price at material level: *Material*

> **i Note**
>
> Price versions support the management of price lifecycles of long-running contracts and are used for recurring fees. Especially when working with price data from SAP CC, price versions are read with the current date (volatile pricing) as the latest prices are always replicated to SAP CC.
>
> For more information, please see Price Version.

> The `PSMB` access sequence is enhanced with the `PROV_PRICE_VRS` condition. Condition records for condition type `PSMB` can then be maintained with a price version. The `4CN` condition table holds the records.
>
> To use price versions for variant prices, you enhance the relevant access sequence with `PROV_PRICE_VRS` condition.

- **Charge Plan**
  The cross-catalog mapping in SAP S/4HANA maps the charging view to the product. The cross-catalog mapping defines which charge plans must be active when customers sign contracts for a commercial product. In SAP S/4HANA, you also define the parameterization of the charge plans. The charge plans are not replicated from SAP CC to the SAP S/4HANA system. Instead, the cross-catalog mapping stores references to the charge plans and to the underlying charge plan signature. The SAP S/4HANA system queries charge plans and imports them synchronously during the maintenance of the cross-catalog mapping.
  For the SAP S/4HANA system to be able to read charge plans from SAP CC, you have to configure the consumer proxy `CO_CRMS4_SOM_CC_V3_CATALOG_SER` as described in section “Setting Up Communication with SAP CC Using Web Services”.

8.1 OData Services

On the Fiori server, you must activate following additional OData services and assign a system alias (transaction **/IWFND/MAINT_SERVICE**):

- **MD_C_PRODUCT_MAINTAIN_SRV** - Manage Product Master Data
- o Depending on this service some additional services must be maintained (see note 2405092)
- **CRMS4_SOM_PROD_SPEC_SRV** - Manage Subscription Product-Specific Data

For general information about how to set up the Fiori Launchpad and activating services, see the documentation for the Fiori Launchpad.

You can also check the SAP Fiori apps reference library for Manage Subscription Product-Specific Data and Manage Product Master Data.

8.2 Product Replication

You can replicate the subscription product-specific data to an external system by using the Data Replication Framework (DRF). You find all required configuration activities to configure the replication in Customizing for Service under *Master Data Settings for Subscription Master Data* > *Subscription Product-Specific Data* > *Product Replication*. When you work through the required Customizing settings, make sure you complete the following steps:

- Make sure that the subscription product from the product master is replicated.
- Define a replication model for the subscription product-specific data.

- Schedule the replication via the DRF Report for Replication.

> **i Note**
>
> If you want to replicate the complete subscription product, that is, the subscription product and the subscription product-specific data, you must first replicate the subscription product master data. In a second replication step, you must then replicate the subscription product-specific data.

You assign a business system in the Customizing activity *Define Technical Settings for Business Systems*. SAP delivers the following settings:

Field	Value
Replication model	SOM_PROD
Filter object	SOM_PROD
Business object	DRF_0073
Object identifier	ERP_0057
Service operation	SOM_PROD
Outbound implementation	SOM_PROD

If you use the predefined replication model, you nonetheless must define and assign the target system for your replication model and activate the replication model. In addition, you must adapt the predefined outbound parameter PACK_SIZE_BULK to your specific needs.

9 Organizational Data

In SAP S/4HAN, the organization unit can be created either through WebClientUI via business role **SOM_REP_SOM** using application *Sales Operations* > *Search: Organizational Model* > *Root Organizational Unit* or by copying SD organizational structure in Customizing under *Service* > *Master Data* > *Organizational Management* > *Data Transfer* > *Copy SD Sales Structur*.

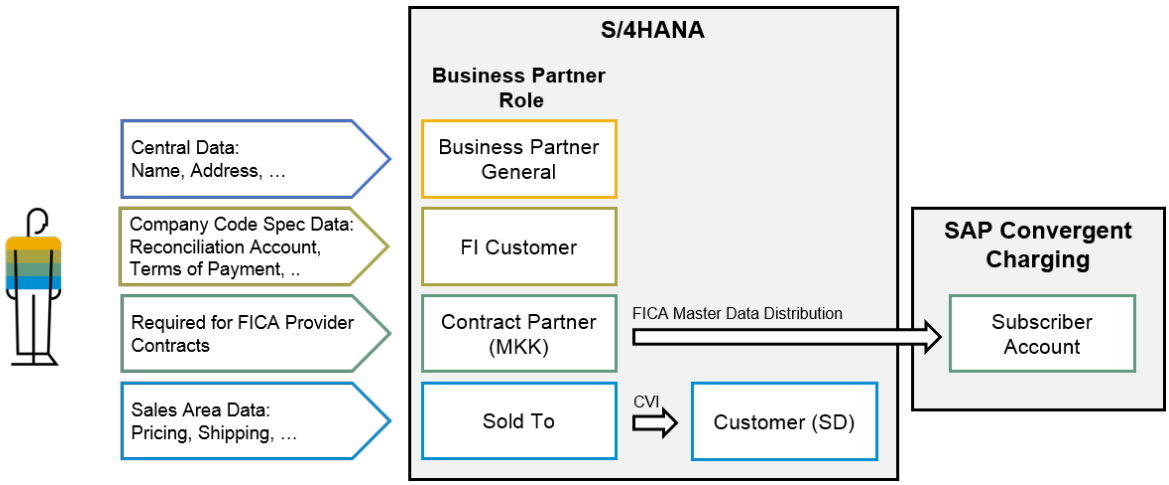
Assignment of Sales Organizations in SAP S/4HANA for Customer Management to SD Sales Organizations is automatic when it is copied from the SD sales structure. Otherwise, it has to be maintained in Customizing under *Service* > *Master Data* > *Organizational Management* > *Assign Customer Management Sales Organizations to SD Sales Organizations*.

To determine the Customer Management organizational unit in transactions, enable the respective determination in WebClient UI by using application *Sales Operations* > *Search: Organizational Model* > *Open the Organizational unit* > *Enable Sales Org & Service Org in Allow Org. Unit to be Determined*. You might have to update the buffer after the determination is set by executing report **HRBCI_ATTRIBUTES_BUFFER_UPDATE**.

> **i** Note
>
> For the SD sales organization, if it is assigned to a common distribution channel/ division in Customizing *Sales and Distribution* > *Master Data* > *Define Common Distribution Channels/ Define Common Divisions*, then the Business partner must be assigned to the sales area that contains the common distribution channel and division. This is required for correct determination of the customer pricing procedure.

10 Business-Partner-Related Master Data

The following figure shows the business partner in SAP S/4HANA and its integration with SAP CC.



Business Partner in SAP S/4HANA with Integration to SAP CC

The business partner is created as a central object in SAP S/4HANA. Depending on the business requirements different roles can be assigned to the business partner. For Subscription Order Management as a part of SAP Billing and Revenue Innovation Management (BRIM) using provider contracts in Contract Accounts Receivable and Payable (FI-CA), the role MKK is required for the business partner. Business Partners having this role are also replicated to SAP CC as Subscriber Accounts.

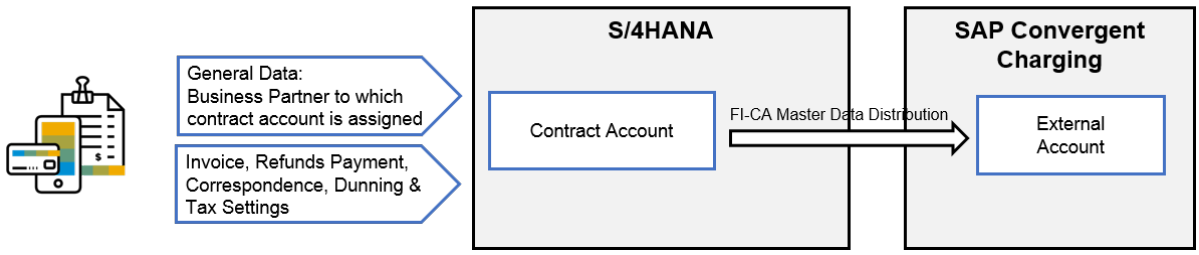
The following Customizing activities in SAP S/4HANA are prerequisites for the creation of business partners:

- Define number ranges for business partners under *Cross Application Components* > *SAP Business Partner* > *Business partner* > *Basic Settings* > *Number Ranges and Groupings* > *Define Number Ranges*.
- Define the grouping and assign number ranges under *Cross Application Components* > *SAP Business Partner* > *Business partner* > *Basic Settings* > *Number Ranges and Groupings* > *Define Groupings and Assign Number Ranges*.
- Assign grouping to customer account groups under *Cross Application Components* > *Master Data Synchronization* > *Customer/ Vendor Integration* > *Business partner Settings* > *Settings for Customer Integration* > *Field Assignment for Customer Integration* > *Assign Keys* > *Define Number Assignment for Direction BP to Customer*.

> **i Note**
>
> If you want to have the customer number the same as the business partner, flag the **Same Numbers** indicator in this Customizing setup.
>
> Number ranges for the customer and business partner must have the same areas, and external number assignment is set in Financial Accounting (FI).

You maintain business partners with the *Manage Business Partner Master Data* app delivered with the business role `SAP_BR_BUPA_MASTER_SPECIALIST`. Alternatively, you can use the Web UI delivered with the `S4C_SOM_REP` (Internal Sales Rep. (Subscr.) role.

If Contract Accounts Receivable and Payable is active in Customizing under *Service* > *Master Data* > *Contract Account* > *Define Basic Settings*, the contract account is also required for the business partner. In SAP S/4HANA, the contract account is used both in FICA and in Subscription Order Management. Contract account categories and number ranges you maintain in Customizing for Contract Accounts Receivable and Payable under *Basic Functions* > *Contract Accounts* > *Number Ranges and Contract Account Categories* > *Define Number Ranges/ Configure Contract Acct Categories and Assign Number Ranges*. The following figure shows the distribution of contract account to SAP CC.



Contract Account in SAP S/4HANA with Integration to SAP CC

You create contract accounts with the *Manage Contract Accounts* app. Alternatively, you can use the Web UI delivered with the `S4C_SOM_REP` (Internal Sales Rep. (Subscr.) role.

> **i Note**
>
> The template must be assigned to the contract account class in Customizing for Contract Accounts Receivable and Payable under *Integration* > *Customer Relationship Management* > *Business Agreement* > *Determine Template for Contract Account for Replication*. Contract account classes are defined in the Customizing under *Service* > *Master Data* > *Contract Account* > *Define Contract Account Class*. The number range for contract account object `FKK_KONTO` should be same as BUAG and set to external.

The SAP S/4HANA system transfers the business partner and contract account data to the SAP CC system by means of the Web service `SUACProvisioningServices` using the simple object access protocol (SOAP) and creates the corresponding subscriber account and external account in SAP CC.

As a prerequisite, you must activate replication in the Customizing for Contract Accounts Receivable and Payable under *Integration* > *Convergent Charging* > *Activate Joint Replication of All Master Data*.

If you are using Subscription Order Management, enter the function module `FKK_SAMPLE_5707_SAPCRM` for event 5707 in Customizing for Contract Accounts Receivable and Payable under *Program Enhancements* *Define* > *Customer-Specific Function Modules*. The function module updates the provider contract status in Subscription Order Management.

Technical Configuration

You must configure a logical port for the consumer proxy `CO_FKKCC_SUBSCRIBER_ACCOUNT` as described in the section “Setting Up Communication with SAP CC Using Web Services”.

You can maintain provider contracts by using the `RFC CRM_ISX_CONTRACT_MAINTAIN`.

For more information on the interfaces existing between SAP CC and SAP S/4HANA, see Customizing for Contract Accounts Receivable and Payable under *Integration* > *Convergent Charging* > *Manage Interfaces to SAP CC* > *Display Overview of Interfaces to SAP CC*.

In the interest of efficient data storage and distribution, all the master data is jointly replicated to SAP CC. This means that the business partner and contract accounts are not distributed immediately from SAP S/4HANA to the SAP CC system. Instead, they are distributed when the provider contract they belong to is distributed to SAP CC. This is the default way of distribution in SAP S/4HANA.

The SAP S/4HANA system persists the master data for the provider contract and distributes it to the SAP CC system. In this way, you can monitor the distribution of all master data, as well as handle errors in the SAP S/4HANA system. The SAP S/4HANA system ensures the logical order of replication of all master data objects from the SAP S/4HANA to SAP CC system.

Master data for new business partners and contract accounts is replicated to SAP CC when the first provider contract is distributed in the following order:

- Replication of business partner from SAP S/4HANA system to SAP CC
- Replication of contract account from SAP S/4HANA system to SAP CC
- The subscription contract is distributed to the SAP S/4HANA system and to SAP CC as provider contract
- Update Subscription Order Management with status of contract distribution

10.1 Integration with SAP Digital Payments

The SAP Digital Payments enables you to connect SAP and non-SAP consumer applications with payment service providers (PSPs) and to facilitate secure, end-to-end processing of digital payments including the following function:

- Card creation and card deletion
- Payment authorization and payment authorization cancellation
- Payment settlement and payment refund
- Digital payment advice
- PSP activation
  You can choose which of the available PSPs you want to activate. Note that you will need a license with each PSP you want to use to process payments.

Subscription Order Management does not directly integrate into SAP Digital Payments but reuses existing integrations of the business partner in Convergent Invoicing and Contract Accounts Receivable and Payable (FI-CA).

Payment card data on the business partner is only stored as a token. The contract account itself does not store any payment card information.

You maintain payment card data for business partners with the *Manage Business Partner Master Data* app delivered with the `SAP_BR_BUPA_MASTER_SPECIALIST` business role. Alternatively, you can use the apps *Create Contract Account* and *Edit Contract Account* in the Web UI delivered with the `S4C_SOM_REP` (Internal Sales Rep. (Subscr.) role.

By choosing the add functionality, the registration process is started. The user is redirected to the payment service provider where the card data can be entered and stored. No card data but only masked information and a token is sent back to the SAP S/4HANA system. This information is stored together with the business partner data. A card ID can be used as identifier, for example, when referencing the card data in the contract account.

When creating a payment card via the contract account, both business partner and contract account are updated. The payment card is stored with the business partner, and the contract account just holds the payment card reference. Only cards that are stored with a business partner can be used as a card reference for payments and refunds.

When a payment needs to be made via a payment card:

- Assign a contract account with corresponding payment card
- Create a new contract account with the new card/assign existing payment card number
- Assign a payment card number to an existing contract account. This has impact on all contracts using this contract account

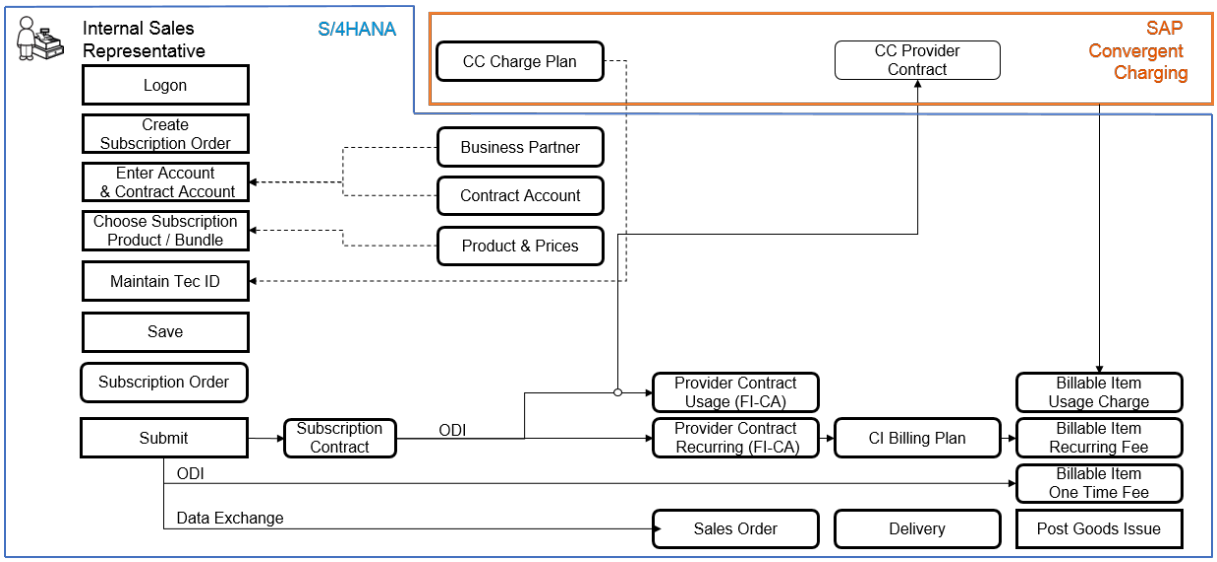
During order capture, payment card information is only stored as a reference on the contract account. Authorization is not made during order capture or contract processing. Authorization is made in Convergent Invoicing or during the payment run. Authorization data is requested via the SAP Digital Payments from the payment service provider. Settlement is triggered from Contract Accounts Receivable and Payable (FI-CA), transferring the amounts to be settled via the SAP Digital Payments to the payment service provider, which itself can connect to the related banks and credit card organizations.

> **i Note**
>
> In the SAP S/4HANA system you make the setting for the SAP Digital Payments integration in the SAP Customizing Implementation Guide under *Integration with other SAP Components* > *Integration with the SAP Digital Payments Add-on* > *Activate SAP Digital Payments Add-on*. For Contract Accounts Receivable and Payable activate scenario `04`.
>
> You define the client-specific destination (Transaction `SM59`) of the connected SAP Digital Payments system. General settings for payment cards can be maintained in Customizing for *Cross Application Components* under *Payment Cards* > *Basic Settings*. Payment cards that are managed via the SAP Digital Payments must be marked as relevant for digital payments.
>
> If a customer master for your business partner is created via CVI, you must map the payment card types between the types used in the business partner and the types used for the customer master.
>
> The settings for the CVI mapping you make in Customizing for *Cross Application Components* under *Master Data Synchronization* > *Customer Vendor Integration* > *Business Partner Settings* > *Settings for Customer Integration* > *Field Assignment for Customer Integration* > *Assign Attributes* > *Assign Payment Cards*.

For more details about the SAP Digital Payments, see https://help.sap.com/viewer/p/DIGITALPAYMENTS.

11 Order and Contract Management

The following diagram gives an overview of the transaction data flow in Subscription Order Management between SAP S/4HANA and SAP CC.



Transactional Data Flow in Subscription Order Management (Example)

A subscription order is a special order used to sell products or product bundles consisting of subscription products (usage-based charges, recurring- and one-time charges) and physical goods.

When the subscription order is submitted, a subscription contract document is automatically created with the subscription contracts as its items for the subscription products. Contract changes are made through change processes where a change order is triggered (depending on the change process type) on execution of the desired change process. When this change order is submitted, the changes are transferred to the subscription contract. For more details about contract change processes, see section "Contract Change Process".

For subscription items with cross-catalog mapping, a technical identifier can be defined in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Technical Resources* > *Define Types of Identification* and *Customer Management* > *Transactions* > *Settings for Subscription Transactions* > *Technical Resources* > *Define Assignment Schema*. If Contract Accounts Receivable and Payable has been activated, a contract account needs to be maintained.

The price is determined in the subscription order based on SD pricing conditions maintained in the pricing procedure. Sap delivers the pricing procedure **A17023** (Subscription Order (US). Maintain the pricing procedure determination for the combination of sales area, document pricing procedure, and customer pricing procedure in Customizing for Sales and Distribution under *Basic Functions* > *Pricing* > *Pricing Control* > *Define and Assign Pricing procedures* > *Set Pricing Procedure Determination*.

The price is copied to the subscription contract based on copy control in Customizing under *Service* > *Transactions* > *Basic Settings* > *Copying Control for Business Transactions* > *Define Copying Control for Item Categories*.

i Note

Following Customizing should be in place for the transactions to be processed.

1. Transaction Type

Transaction types with leading transaction category **BUS2000265** (Subscription Order) and **BUS2000266** (Subscr. Contr. Doc.). PRVO is provided as the pre-delivered transaction type for creating subscription orders and PRVC as the pre-delivered transaction type for subscription contracts (see *Service* > *Transactions* > *Basic Settings* > *Define Transaction Types*).

2. Item Category

Item Categories with leading transaction category **BUS2000155** (Subscription Order Item), **BUS2000156** (Subscription Contract Item) and **BUS2000131** (Sales Item). PROP, PROF, PRCP and PROS are provided as pre-delivered item categories (see *Service* > *Transactions* > *Basic Settings* > *Define Item Categories*).

3. Item Category Determination

In the subscription order, the item category is determined based on the nature of the product selected. Item category groups PRRP (for usage-based and recurring fee products) and PRSV (for one-time fee) were pre-delivered (see *Service* > *Transactions* > *Basic Settings* > *Define Item Category Determination*).

4. Copying Control for Business Transactions

Copy of subscription order to another subscription order or to subscription contract and from subscription contract to change order is controlled by the copying control Customizing.

Please see the following Customizing settings for *Service*:

- *Transactions* > *Basic Settings* > *Copying Control for Business Transactions* > *Define Copying Control for Transaction Types*
  PRVO to PRVC and vice versa, PRPO to PRPA and vice versa are pre-delivered.
- *Transactions* > *Basic Settings* > *Copying Control for Business Transactions* > *Define Copying Control for Transaction Types Item Category*
  PROP to PRCP and vice versa, PRPO to PRPC and vice versa, PROP to PROP, PROF to PROF and PROS to PROS are pre-delivered.
- *Transactions* > *Basic Settings* > *Copying Control for Business Transactions* > *Define Copying Control for Transaction Types Item Category*
  PRCP to PROP is pre-delivered.

5. Settings for Subscription Transactions

Subscription-specific settings for transaction types and Item categories are maintained in Customizing (see *Service* > *Transactions* > *Settings for Subscription Transactions* > *Define Settings for Transaction Types* and *Customer Management* > *Transactions* > *Settings for Subscription Transactions* > *Define Settings for Item Categories*).

6. Settings for Document Distribution

Document distribution settings are made to distribute the subscription contract to Contract Accounts Receivable and Payable as provider contract (see *Service* > *Transactions* > *Settings for Subscription*

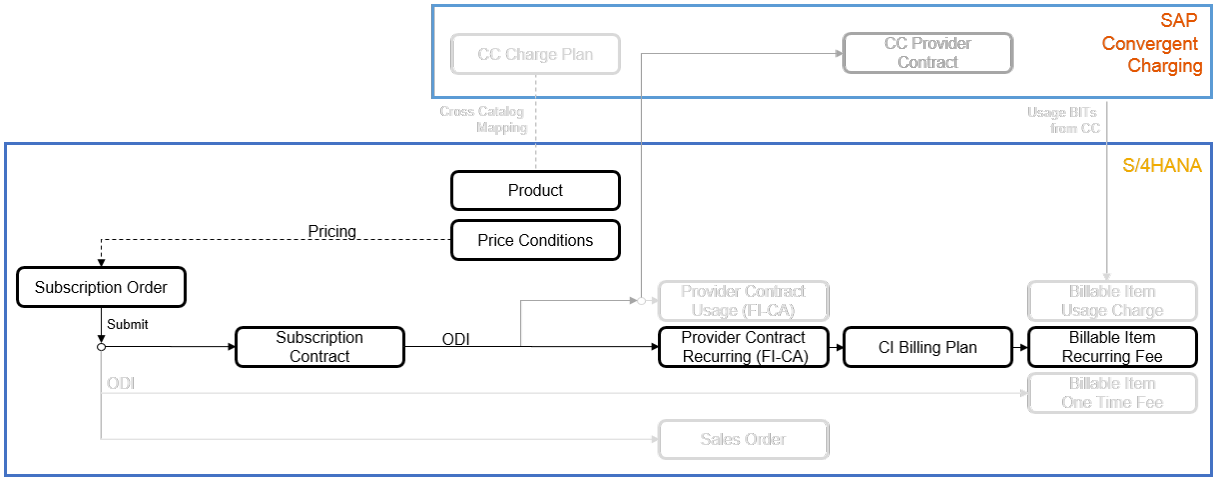
Transactions > *Define Settings for Transaction Types* and *Customer Management* > *Transactions* > *Settings for Subscription Transactions* > *Document Distribution* > *Define Settings for Document Distribution*).

You create subscription orders with the*Manage Subscription Orders* app. Subscription contracts you create with the *Manage Subscription Contracts* app. Both are delivered with the `SAP_BR_INTRNAL_SALESREP_SOM` or using the transactions delivered for the Web UI with the `S4C_SOM_REP` (Internal Sales Rep. (Subscr.) role.

11.1 Recurring Fee in Subscription Order

Subscription products that are used in subscription orders may need to be invoiced periodically, such as a monthly fee for a subscription.

When a subscription order with a recurring fee is submitted, a subscription contract is created with a price copied from the order. During contract distribution to Contract Accounts Receivable and Payable, contract items for which recurring fees exist in the pricing elements are identified. A dependent billing plan is created in Convergent Invoicing for these items in addition to the provider contract item. This billing plan holds the information about the billing cycle, reference to the provider contract item, payment amount, and payment currency. This billing plan is used to request the billable item using the corresponding features in SAP Convergent Invoicing.



Transactional Flow of Recurring Fee (Example)

The recurring fee calculation is based on either the **billing cycle** or the **billing plan cycle**. Both the fields are available in assignment block **Subscription-Specific Data** on the item details screen. The billing cycle is derived from the subscription product. The billing plan cycle remains empty and non-editable if the price calculation is successful based on the billing cycle. For example, if the billing cycle is monthly and the condition record (transaction: VK11) is maintained with calculation type monthly, then there is a direct relation (conversion) and so the price calculation is successful. In this case, the billing plan cycle is not relevant and is non-editable.

Whereas if the billing cycle is weekly but the condition record is maintained with calculation type monthly, there is no direct conversion and the price calculation is unsuccessful. In this case, the billing plan cycle is editable.

Once you select a billing plan cycle that fits the pricing calculation type, the price will be calculated successfully. The billing plan cycle is copied to the FICA billing plan.

> **i Note**
>
> The subscription contract transaction type and item category must be mapped to the billing plan type and billing plan item type in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Recurring Fees* > *Assign Billing Plan and Billing Plan Item Types*.
>
> Billing-plan-related settings can be made in Convergent Invoicing in Customizing for Contract Accounts Receivable and Payable under *Convergent Invoicing* > *Enhanced Functions* > *Billing Plans* (Maintain number ranges, define billing plan type and billing plan item type and their assignment).

11.1.1 Detailed Billing

To create billing plan items based on active condition types, set the *Detailed Billing* flag in Customizing for *Service* under *Transactions* > *Settings for Subscription Transactions* > *Recurring Fees* > *Configure Settings Using Billing Plans with Convergent Invoicing* > *Assign Billing Plan and Billing Plan Item Types*.

To set the flag, the mapping between condition types and billing plan item types must be maintained in Customizing for *Service* under *Transactions* > *Settings for Subscription Transactions* > *Recurring Fees* > *Configure Settings Using Billing Plans with Convergent Invoicing* > *Define Price Conditions for Distribution to SAP Convergent Invoicing.*

11.1.2 Subscription Item Quantity

You can enter a quantity on subscription item level. The system then calculates a quantity-based recurring price in the subscription order and solution quotation. Scaled prices are supported. The quantity-based price is transferred to the provider contract, together with the billing cycle to billing plan and to revenue accounting.

To enable the quantity field in subscription items in the subscription order and solution quotation, set the *Enable Qty* indicator for the item category in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Define Settings for Item Categories*. This setting is by default available for the following objects:

- Subscription orders (`PROR`)
- Subscription contracts (`PRCR`)
- Solution quotations (`PRQR` and `PRQF`)

> **i Note**
>
> The quantity is not relevant if you are using SAP CC. If you have integrated SAP CC, do not set the *Enable Qty* indicator for item categories used for subscription products, that is, products that neither use a charge plan nor billing plan. For subscription products, the quantity field cannot be edited. The system automatically sets 1 as the default value. For bundle products, you cannot edit sub-items. The system

multiplies the quantity entered for the main item by the quantity for the sub-items. However, if a sub-item is added manually to the main item (not through a bundle), you can make an entry in the sub-item quantity field. In this case, the system does not multiply the quantity entered for the main item by the quantity for the sub-items.

If a sub-item represents a usage product in a bundle, you must set the *Fixed Quantity* indicator in the sub-item when you model the product bundle. This way, the item will not enter the quantity calculation for subscription products.

11.1.3 Recurring charges in SAP CC

Recurring charges can also be managed via SAP CC. This is especially required for scenarios with a complex logic for the recurring fee. In these scenarios, you can do the following:

- Transfer price data for SAP CC using DRF
- Create and update price tables in SAP CC
- Create subscription orders and solution quotations with recurring fees
- Maintain manual recurring fees
- Derive CC price table or create CC price table (entry) in the event of manual fees during contract distribution

SAP CC can now create recurring billable items and transfer them to Convergent Invoicing for further processing.

For the item categories, the REC IN CC indicator must be set (see Customizing for *Service* under *Transactions* > *Settings for Subscription Transactions* > *Define Settings for Subscription Items*).

Price condition records are transferred to SAP CC for the condition types maintained in Customizing for *Service* under *Transactions* > *Settings for Subscription Transactions* > *Recurring Fees* > *Configure Settings for Recurring Fees with Convergent Charging* > *Define Price Conditions for Distribution to SAP Convergent Charging*.

When a condition record is created or updated, the price data is transferred to SAP CC into a mapping table (price table) with the product as table ID. This transfer is controlled by the data replication Customizing (see transaction DRFIMG: *Define Custom Settings for Data Replication* > *Define Replication Models*). SAP delivers the replication model SOM_PRCD (see *Define Custom Settings for Data Replication* > *Define Replication Models*) and the outbound implementation SOM_PRCD (see *Enhance Default Settings for Outbound Implementations* > *Define Outbound Implementations*) for the replication of price condition records to SAP CC. However, as the business system is a prerequisite, it must be mapped against the replication model. You can create a dummy business system and assign it to the replication model SOM_PRCD in transaction DRFIMG under *Define Custom Settings for Data Replication* > *Define Technical Settings* > *Define Technical Settings for Business Systems*.

> **i Note**
>
> You can mass replicate prices by using transaction DRFOUT. Mass replication is especially useful when prices are available for a condition type that you newly added to Customizing of the distribution to SAP CC.

Manual prices or contract-specific prices are transferred to SAP CC as agreement tables that are determined by an algorithm that determines which agreement table to use for which contract. The number of required agreement tables can be defined in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Recurring Fees* > *Configure Settings using SAP Convergent Charging* > *Maintain Manual Price Table Count in Convergent Charging*.

Price table ID and price key must be mapped as parameters in the charge plan in SAP CC. While maintaining the CCM on a subscription product, the price key parameters can be assigned to the condition type or variant condition key alias. For assigning multiple condition types or variant condition key aliases, the price key parameters must be mapped to the charge plan in SAP CC.

> **i Note**
>
> When working with manual prices in combination with list prices you need to model the different recurring charges in two charge plan mappings in CCM. SAP delivers the ODI schema PPCM including the following steps, which you can use in the schema determination for the contract distribution if you are working with manual recurring prices in SAP CC. The PRCC (relevant in the event of manual price replication to CC) and PCCA (relevant in pure recurrence in CC scenario) steps are added steps to be applied in combination with the "regular" contract distribution steps.

Step Type	Description	Category	Category Description	Step Sequence	Prerequisite Step
CCMU	Step for Contract Update	C1	Subscription contract Update	10	
PCWA	Wait for Activation	P0	Subscription Contract Waits for Activate	10	
PRCC	Recurring Price Replication to CC	P1	Subscription Contract Activation	10	
PCEA	Call FICA Message Contract activation	P1	Subscription Contract Activation	20	10
PCCA	Activate SAP CC Charging contract	P1	Subscription Contract Activation	30	20
PCOF	Distribute One-Off Items	P1	Subscription Contract Activation	30	20
PCWD	Wait for Deactivation	P5	Subscription Contract Waits for Deactive	10	
PCED	Call FICA Message Contract Deactivation	P6	Subscription Contract Deactivation	10	

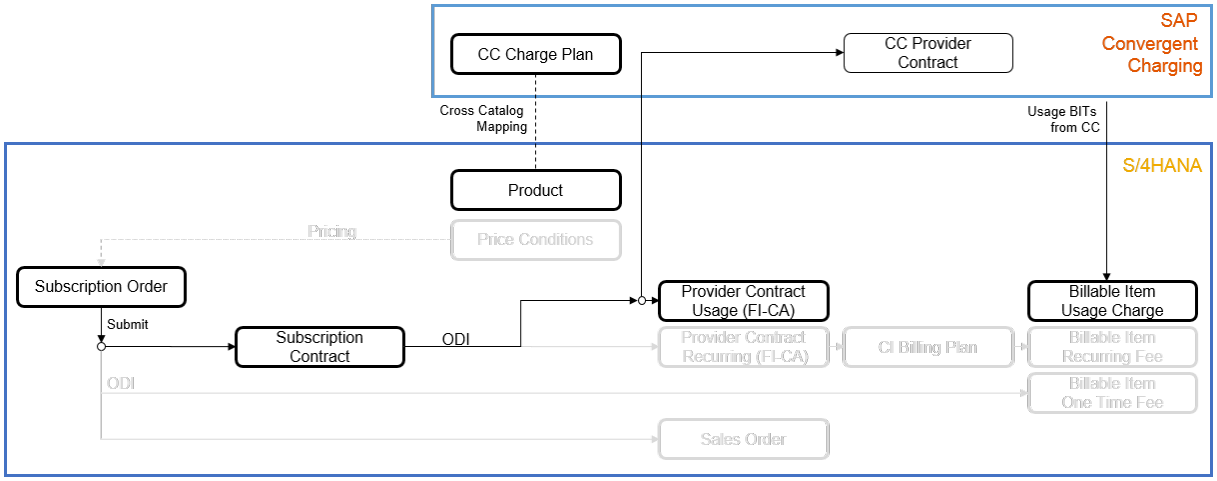
11.2 Usage Fee in Subscription Order

Subscription products that are used in subscription orders may have an assignment to a charge plan in SAP CC via cross-catalog mapping to support complex consumption-based pricing models.

When a subscription order with a usage-based product (with cross-catalog mapping) is submitted, a subscription contract is created with SAP CC tables copied from the order. During contract distribution to the SAP S/4HANA system, the contract items for which a charge plan is assigned are identified. The subscription contract is replicated into a provider contract in Contract Accounts Receivable and Payable. In addition, via joint distribution, it is also replicated to SAP CC.

The charge plan that was assigned to the subscription product via cross-catalog mapping is transferred through the master data distribution to the provider contract in SAP CC.

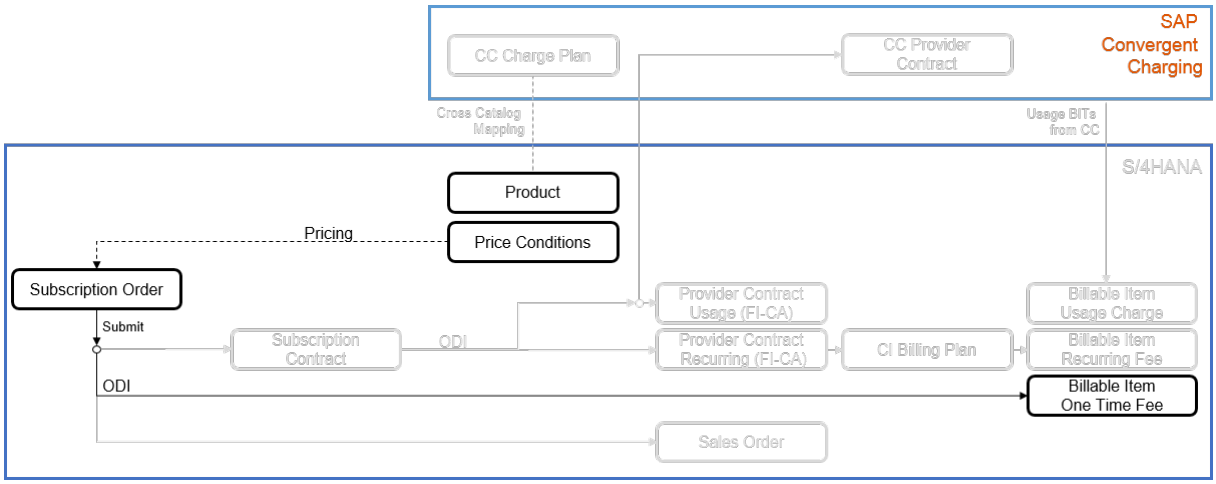
SAP CC charges and rates the incoming usage and sends billable items to SAP Convergent Invoicing.



Transactional Flow of Usage Fee (Example)

> **i Note**
>
> SAP CC tables can also be redefined in the subscription order. You must select **Redefined Table or Assigned Table** instead of Default Table and then click on Action icons to redefine or assign tables. The system creates object- specific tables in SAP CC. These object-specific tables are copied to the subscription contract when the order is submitted.

11.3 One-Off Charge in Subscription Order



Transactional Flow of One-off Charge (Example)

One-off items are identified based on the item type Customizing where the one-off flag is set. The Customizing is maintained under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Define Settings for Item Categories*.

One-off fees are managed via billable items in Convergent Invoicing. The Customizing for the transfer of a one-off billable items is maintained under *Contract Accounts Receivable and Payable* > *Integration* > *Customer Relationship Management* > *Transfer of One-Off Charges*. One-off charges can be distributed in two different ways:

- Distribution of Relevant One-Off Charges from Subscription Order
- Distribution of Relevant One-Off Charges from Subscription Contract

In both cases, an ODI step is triggered that creates a billable item in SAP Convergent Invoicing. If the one-off fees are subitems of a subscription contact item, they have a reference to the contract.

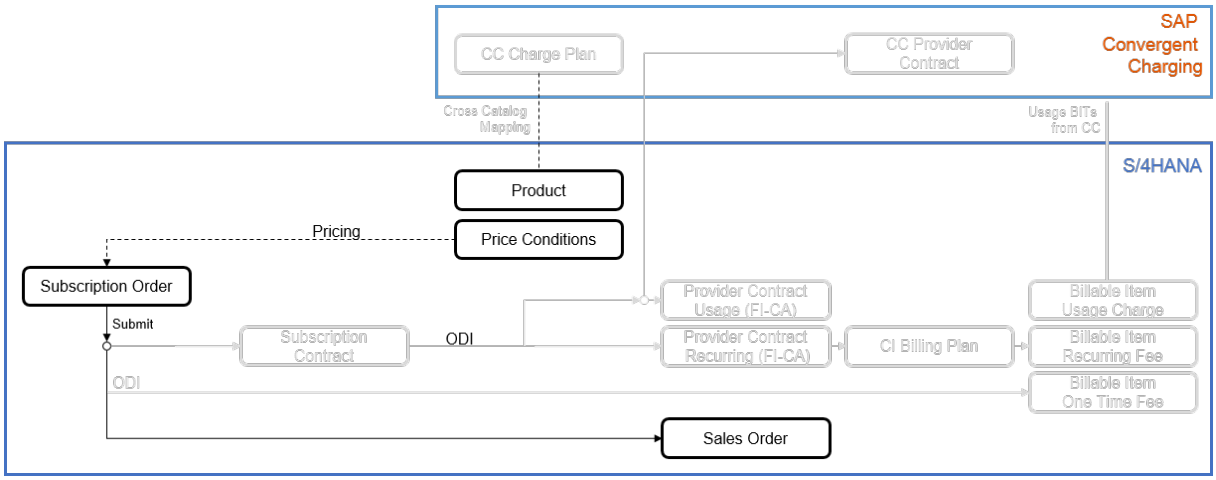
11.3.1 One-Off in FIAR Scenario

The one-off product should be modeled as a sales item in FIAR scenario. No billable item is generated in this case. On submission of the subscription order, the one-off product is copied to the SD sales order, which can be processed further for SD billing and invoicing. The one-off charge is usually a fee that is not relevant for delivery. Hence, on the SD side, the corresponding item category and schedule line can be configured to process the one-off as not relevant for delivery.

> **i Note**
>
> Maintain data exchange Customizing as explained for the sales product in section Sales Product in Subscription Order [page 34].

11.4 Sales Product in Subscription Order

A subscription order can also contain physical goods represented as sales items in the subscription order. These sales items result in SD sales orders.



Transactional Flow of Sales Product (Example)

You must map the transaction type to the transaction category **BUS2000265** with class **CL_CRMS4_SOM_SALESDOC_FWD** in the data exchange Customizing under *Service* > *Transactions* > *Data Exchange in SAP S/4HANA for Service* > *Define Custom Handler Classes for Forward Data Exchange*.

You must make the following settings in Customizing for sales and distribution:

- Configure the order type, item category, and item category determination under *Sales* > *Sales Documents* > *Sales Document Header* > *Define Sales Document Types*.
- Make the settings under *Sales* > *Sales Documents* > *Sales Document Item* > *Define Item Categories*.
- Make the settings for the values defined in the previous activities under *Sales* > *Sales Documents* > *Sales Document Item* > *Assign Item Categories*.

> **i Note**
>
> The document type and item category in the SD Customizing must use the same technical keys as the transaction type and item category in subscription orders. SAP delivers the transaction type `PRVO` for subscription orders with item category `PROS` (default) for sales items. The SD document type (or order type) must be `PRVO` and the SD item category must be `PROS`.
>
> If the system issues the error message *Field H_CURR is not in VBAK or VBKD* when you submit a subscription order with sales items, set the `NDI` (New Dimension Integration) application indicator in transaction `BF11`. For more details, see SAP note 633282.

The pricing procedure determination in SD sales order is dependent on the document pricing procedure in the sales order type and so the pricing procedure in the SD sales order can be different from the subscription order. The price for sales item is copied to the SD sales order if the subscription order and SD sales order use the same pricing procedure or if the subscription order and SD sales order use different pricing procedure but the condition type (for example, PSPB for which price is maintained) is present in both.

Otherwise, the sales item pricing is not copied to the SD sales order.

Available-to-Promise (ATP) Check

If the Business Transaction Event application `CRMATP` is active in transaction `FIBF` (see *More* > *Settings* > *Identification* > *SAP Applications*), the system performs an ATP check for sales items.

As a prerequisite you must assign the ATP profile to the item category in Customizing under *Service* > *Basic Functions* > *Availability Check* > *Assign ATP Profile to Item Category*. You maintain the ATP profile in Customizing under *Service* > *Basic Functions* > *Availability Check* > *Define ATP Profile*.

As an additional prerequisite the standard ATP settings in sales and distribution must be maintained.

11.5 Bundles in Subscription Order

There are two types of bundles available in Subscription Order Management:

- **Sales Package**
  The bundle product (main item) of a sales package is a sales product. The bundle product is a dummy product that only provides a structure. Sales packages are used in a subscription order. Independent subscription contracts are created for the contract-relevant sub-items.

  > **i Note**
  >
  > The product type, to which the bundle product belongs, must be mapped to the product role *S - Sales Package* in Customizing under *Service* > *Master Data* > *Settings for Subscription Master Data* > *Subscription Product-Specific Data* > *Assign Product Roles to Product Types*.

- **Subscription Package**
  The bundle product (main item) of a subscription package is a subscription product (recurring, usage, or a combination of both). Subscription packages are used in subscription orders. They result in subscription contracts with the main item belonging to the bundle product and subitems for the contract-relevant subitems in the order.
  The product type, to which the bundle product belongs, must be mapped to the product role *R Subscription* in Customizing under *Service* > *Master Data* > *Settings for Subscription Master Data* > *Subscription Product-Specific Data* > *Assign Product Roles to Product Types*.

> **i Note**
>
> When a bundle product is added in the subscription order, it explodes with the bundle components as subitems. For a sales package, when the subscription order is submitted, a subscription contract document is created with separate subscription contracts for the contract relevant subitems in the order. Whereas, for the subscription package, when the subscription order is submitted, a subscription contract document is created with the bundle product as the contract main item and the contract relevant subitems in the order as contract subitems.

11.6 Advanced Variant Configuration (AVC)

You can use advanced variant configuration to configure products in subscription orders or solution quotations.

Information on how to install AVC on your S/4HANA system, please refer to the SAP S/4HANA installation guide and the following SAP Notes:

- 2811164
- 2598627
- 2551305

Maintain the Fiori launchpad URL for AVC in the `CRMV_IC_BORADM` view for `S4C_FIORI`.

Depending on the characteristics and attribute values set for a product in a subscription item, using AVC you can:

- Configure subscription items to calculate variant surcharges via SD pricing
- Transfer configuration information into the provider contract in Convergent Invoicing
- Transfer configuration information to SAP CC
- Perform variant pricing

Modeling Configurable Products

If you would like to maintain variant configuration for subscription items in subscription orders or solution quotations, you must model the product as a configurable product. This means, you must set the *Material is Configurable* indicator in the central product master (material master).

You model products in transaction `PMEVC` where you can assign a class and configuration profile to a product. Classes you create using transaction `CL02`. They must have the *300 - Variants* class type. Each class is assigned to the characteristics. Characteristics you create using transaction `CT04`.

In the configuration profile, you must select the *A - Advanced Variant Configuration* processing mode. You assign the variant conditions to the characteristic values on the *Variant Pricing* tab. Alternatively, you can create object dependency using the editor. The characteristic `VARKOND` must be part of the class assigned to the configurable product. Also, the characteristic must reference the `SDCOM` table and `VKOND` field on the *Addnl data* tab. This is required for variant pricing calculation.

As a prerequisite for the configuration of the ubscription product, you must maintain the configuration data with default configuration in the item category Customizingunder *Service* > *Transactions* > *Basic Settings* > *Define Item Categories*. The item categories for subscription order (`PROP`, `PROR`) and for solution quotation (`PRQP`, `PRQR`) delivered by SAP have the default configuration value *Maintain Configuration on User Interface*.If all mandatory characteristics have default values, then the default configuration is automatically set for the subscription product based on the configuration value *Execute default Configuration Automatically*. However, if required you can change the configuration .

Configuration data in the subscription contract depends on the value of the *Copy Configuration* field in the Customizing for the item category copy control which you maintain under *Service* > *Transactions* > *Basic Settings* > *Copying Control for Business Transaction* > *Define Copying Control for Item Categories*. SAp

delivers copy control from PROP to PRCP with *B - Copy Configuration from Source Item*. In this case the configuration data will be copied to the subscription contract.

> **i Note**
>
> Alternatively, you can model your products using the Fiori apps delivered for variant configuration modeling with the SAP_BR_PRODUCT_CONFIG_MODELER business role template.
>
> To launch the advanced variant configuration, include the target mapping semantic object *VariantConfiguration*, action *configureLegacy* into your Fiori Launchpad catalog which is assigned to your business role.
>
> To reference the semantic object, you can use the SAP_TC_LO_VC_COMMON technical catalog. The SAP_BR_INTERNAL_SALES_REP business role contains the respective target mapping.
>
> When you assign a charge plan during the cross-catalog mapping, you use the *Manage Subscription Product-Specific Data* app to activate the charge plan, the parameters, and discounts based on the characteristic when you maintain the subscription specific data for a configurable product.

Variant Pricing

SAP delievers the A17023 (for subscription order) and A17019 (for solution quotation) pricing procedures. They include the variant pricing condition types VA00 and VASE. Maintain variant pricing for the configurable products with these condition types in transaction VK11. The variant pricing must be based on the variant condition assigned to the product in PMEVC. When a configurable product is used in a subscription order or solution quotation, the system determines the variant conditions and calculates the variant price based on these values. When the configuration values are confirmed (by pressing the *Done* button) the variant prices are copied to the subscription order item and they are displayed in the assignment block price details.

Variant prices, like other prices, are copied to the subscription contract on submit of the subscription order.

Configuration Changes in Active Subscription Contracts

You can make configuration changes to configurable subscription product. You must activate the change process in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Contract Changes* > *Settings for the Maintenance Framework (BTMF)*. You find the setting under *Activate Change Process*.

The change process *Configuration Change* uses the ISTA process type which creates a change order. On submit of the change order a new item with changed characteristic values is added to the subscription contract and becomes technically active if the distribution is successful. The old item becomes technically inactive. The system updates the contract history with the change.

> **i Note**
>
> If the subscription contract refers to a master agreement where the subscription item is set with *Fixed Configuration*, the change process *Configuration Change* would not be available for such a contract.

You can use the Business Add-In (BAdI) `CRM_PROVIDER_COPY_MA_CONFIG` to copy the configuration from the master agreement to the subscription order or solution quotation.

If you want to perform additional processing, for example by copying data when you create a subscription order with reference to the master agreement, you must create an implementation for this BAdI and implement the methods in the `IF_CRM_PROVIDER_COPY_MA_CONFIG` interface.

For example, when a subscription order is created with reference to this master agreement item, additional customer-specific configuration settings have to be copied from the master agreement to the new subscription order item.

More Information

For more information, see Advanced Variant Configuration.

11.6.1 Material Variants in Subscription Scenario

Material variants represent products with pre-defined values for the characteristic inherited from the configurable product. The subscription scenario supports material variants if they are mapped to cross-plant configurable products.

Please consider the following when you create material variants of a subscription product:

- Maintain the configurable product in the *cross-plant configurable product* field in the basic data view of the material variant (*Configuration* tab in the *Manage Product Master* app)
- Maintain the characteristic values for the material variant by using the *Configure Variant* button (*Configuration* tab in the *Manage Product Master* app)
- Maintain the configurable product in the *Pricing ref. material* field in the *Sales Org.2* view of the material variant
- Create object dependency to determine the variant condition `VARKOND` in variant configuration modelling of the configurable product (transaction `PMEVC`)
- Maintain prices (recurring fee and variant prices) only for the configurable product (transaction `VK11`). The material variant inherits prices from the configurable product.

11.7 Payment Card Data in Subscription Items

You can enter any number of payment cards for a business partner in the payer role. However, you can only assign one payment card to a subscription item. If one of the payment cards entered for a business partner has no credit limit, the system assigns this payment card to the subscription item when you add payment cards to a subscription order or solution quotation in the payment method assignment block. If none of the assigned payment cards is without a credit limit, the system does not assign any of the payment cards to the subscription item.

If a payment card is added to a subscription item, payment cards assigned to the subscription header data have no impact on the respective items.

The transaction type must include the payment plan type 03 (*Digital Payment Card*) as payment data under transaction category Sales. You define transaction types in Customizing under *Service* > *Transactions* > *Basic Settings*.

For information on the prerequisites for integrating SAP Digital Payments, please see Integration with SAP Digital Payments [page 24].

11.8 Contract Data

The following types of contracts and agreements exist in Subscription Order Management:

- Subscription contract
  A subscription contract comprises all legally binding agreements regarding the provision and billing of services that are entered by a customer and a company for a specified period of time.
  If you have made the appropriate system settings, the master data of provider contracts is automatically replicated from Subscription Order Management and Contract Accounts Receivable and Payable (FI-CA). For integration and data distribution of the provider contract in SAP S/4HANA and SAP CC, you can use the RFC **CRM_ISX_CONTRACT_MAINTAIN**.

  > **i Note**
  >
  > For the provider contract to be created, the number range is maintained in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Integration* > *Integration with Provider Contract* > *Define Number Range for Provider Contracts*. The number range should also be maintained for object **FKK_VT** as external in convergent invoicing in Customizing under *Contract Accounts Receivable and Payable* > *Basic Functions* > *Provider Contract* > *Define Number Range*.

- Partner agreement
  Partner agreements are used to share revenue with a content provider or to pay royalties. With end customers you have provider contracts, with partners you have partner agreements.
  In technical terms, partner agreements are subscription contracts of the contract category Partner Agreement (indicated by an entry in the Contract Specification field). You create partner agreements inSubscription Order Management. Partner agreements are distributed to Convergent Invoicing in the SAP S/4HANA system as well as to the SAP CC system, in the same way as subscription contracts.
  In Subscription Order, you create partner agreement orders on submission of which partner agreements are created. Also, you can define products as partner products that can be used in partner agreements.

  > **i Note**
  >
  > The partner subscription products are created with product type (material type) **SUBP** that belongs to product type group **3 Subscription** such as SUBS.

11.9 Contract Change Process

Subscription contract change processes are used to trigger contract change requests for a customer. These changes can be personal customer data such as changing payment data (contract account) or contract data for the customer such as extending a contract or changing the product.

These types of processes are very specific to the business of the service provider. Hence, the system provides a framework to define user-defined change processes and a set of sample processes that serve as a basis for new use cases.

List of Change Processes

- Cancellation of Contracts and Cancellation of Options, Revoke Cancellation (of contracts and of options)
- Contract Extension, Revoke Contract Extension
- Product Change
- Change Contract Account Assignment
- Change of Technical Resource
- Upgrade Cross-catalog Mapping Version
- Create Repair Order
- Create Change Order

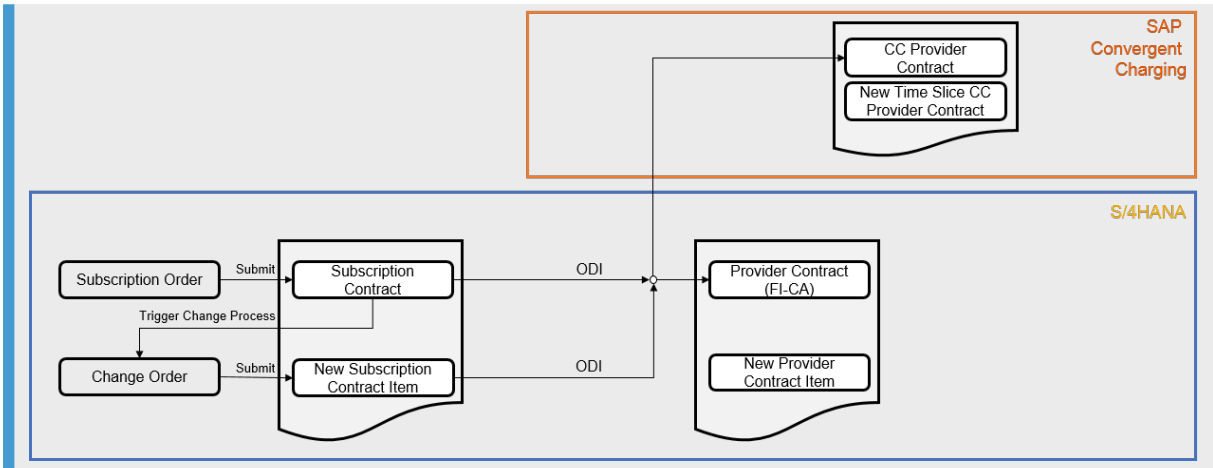
Technical

BTMF Framework to define change processes

BRFplus controls which processes can be selected during runtime

ISTA change via a change order, **ISTF** change directly on contract, **ISTG** contract repair

> **i** Note
>
> Activate the change processes in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Contract Changes* > *Settings for the Maintenance Framework (BTMF)*.



Transactional Flow of Contract Changes (Example with Change Order ISTA)

11.9.1 Locking and Unlocking of Subscription Contracts

You can lock and unlock subscription contracts. You have to activate the locking and unlocking in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Contract Changes* > *Settings for the Maintenance Framework (BTMF)*.

When you lock or unlock a subscription contract the system updates the contract data in SAP CC and Contract Accounts Receivable and Payable in the SAP S/4HANA system based on the following lock levels in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Contract Changes* > *Lock Processing* > *Define Lock Levels*. SAP delivers the following lock levels:

Lock Level	Impact
01	This level has no impact on provider contracts neither in SAP CC nor Contract Accounts Receivable and Payable.
02	In SAP CC the operational status of the provider contract is then set to *Locked*. This level has no impact on provider contracts in Contract Accounts Receivable and Payable.
03	In SAP CC the operational status of the provider contract is then set to *Locked*. In Contract Accounts Receivable and Payable the system sets the end date and lock date of the provider contract item to the same date. A new subscription item is automatically created and distributed to the provider contract as a new provider contract item.

For each lock level the outbound proxy for lock notifications is called.

You can maintain lock reasons in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Contract Changes* > *Lock Processing* > *Define Lock Reasons*. You assign lock reasons to the origin and lock levels. The origin is to specify the source of the lock. SAP delivers the following reasons:

- *Customer*
  This reason indicates that the lock was set on the customer's request.
- *Financial*
  This reason is set by the system automatically.

For lock level 03, you can charge a lock fee to the customer. The condition type `PSLC` in the delivered pricing procedure `A17023` covers lock fees. If you maintain a lock fee for a product and assign a lock reason which corresponds to lock level 03, the system can generate the lock fee as a one-off item for the billing plan. This system behavior you configure in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Recurring Fees* > *Assign Billing Plan and Billing Plan Item Types*.

You unlock subscription contracts using the same change process. You define reasons for unlocking in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Contract Changes* > *Lock Processing* > *Define Unlock Reasons*. For each lock reason a reason for unlocking must be defined.

You can lock and unlock subscription contracts as of a future date. You use the `CRMS4_SOM_LOCK_LIST_PROCESSING` report to schedule locking and unlocking.

11.9.2 Changing Inactive Contracts

For subscription contracts which are not technically active the following change processes are supported:

- Correct Errors (`GEN_ERROR_CORR`)
  This change process can be applied when a subscription contract is created from a solution quotation by pressing *Accept* and the status of the solution quotation then changes to *Completed*.
  The change process must be mapped to the `ISTG` process type (contract repair).
- Request Change (`CUST_CHNG_REQUEST`)
  Change requests can be applied if the subscription contract distribution is scheduled in the future and a subscription contract is created from a solution quotation by pressing *Accept* and the status of the solution quotation then changes to *Completed*.
  The change process must be mapped to the `ISTG` process type (contract repair).
- Reject All (`REJECT_ALL`)
  You change a header by choosing *Reject All* in the subscription contract document.
  The change process must be mapped to the `ISTH` process type (inactive contract).

You configure the change processes in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Contract Changes* > *Settings for the Maintenance Framework (BTMF)*. Then choose *Activate Change Process*.

You define the `REJECT_ALL` change process as a header change process by setting the *Is Header* flag in this activity.

11.9.3 Automatic Renewal of Subscription Contracts

Subscription Order Management supports auto renewal, that is the automatic extension of the subscription contracts. If you choose auto renewal for subscription contracts, the change process *Contract Extension* is performed automatically when a subscription contract reaches its end date.

You must update the date profiles PROVITEM and PROV_QUTITM in Customizing under *Service* > *Basic Functions* > *Date Management* > *Define Date Profiles* with regard to the following parameters:

- The duration (AR_EXTENSION) for which the contract is to be extended and the duration AR_PERIOD, which is the duration before the contract end or end of term when the auto renewal is to be processed. If the indicator is set, RENEWAL EXTENSION PERIOD in the *Automatic Renewal* assignment block of the subscription item is set to the default extension period of the product. However, you can change it to one of the possible values for the three extension periods defined for the product.
  RENEWAL START PERIOD is populated based on the default value for the date profiles which you can change.
- The date type AR_START specifies the date on which the auto renewal process is to be executed to extend the contract. It is calculated by subtracting the period (AR_PERIOD) from the contract end or end of term.

> **i Note**
>
> If you use customer-specific date profiles for subscription orders, contracts and solution quotations, you must include the duration and date type mentioned above in the date profiles for auto renewal. You must adjust any custom date rule logic accordingly.

The action profile for subscription contract items IST_ACTION_CONTRACT_ITEM includes the action definition CONTRACT_AUTO_RENEWAL.

Change Process

You add the change process n Customizing for *Service* under *Activate Change Processes* > *Transactions* > > *Settings for Subscription Transactions* > *Contract Changes* > *Settings for the Maintenance Framework (BTMF)*.

The change process of type ISTF allows for the change of the *Change Auto Renew* indicator for an active subscription contract. The change process is not available for products where CONTRACT AUTO RENEWAL INDICATOR is marked as *2 - Not relevant for Auto Renewal* or *3 - Set to Yes, cannot be changed*. This process only affects auto subscription contracts where no changes are made to downstream objects.

When maintaining products, on the *Product Change* tab (CONTRACT DURATIONS) you can set the auto renewal attributes for a product.

11.9.4 Contract Changes After Advance Payments

Subscription contract change processes are available to execute contract changes when required.

Situations can occur where billable items have been requested and billed, and customers have paid an invoice before the change process is executed and the changes take effect. This is a common scenario when invoicing occurs at the start of a period. In this case, contract changes require a reversal of the invoicing process. In

Convergent Invoicing, you can reverse billable items even if they have been included in an invoice. To reverse the invoicing process, you first manually reverse the billable items concerned for the date the contract change is to take effect. Then you execute the change process. If the change is to take effect in the middle of a period, billable items have to be reversed for the entire period (month or year) before you can re-request the billable items for the period concerned. In Subscription Order Management, this process has been automated. The following ODI steps are provided for the automatic reversal and re-request of billable items:

Step Type	Description	Category	Document Distribution Class
PBRC	Call FICA for BITS Re-Request	P1	CL_CRMS4_SOM_BITS_REQUEST
PBRD	Call FICA for BITS Re-Request	P6	CL_CRMS4_SOM_BITS_REQUEST
PBVC	Call FICA for BITS Reversal	P1	CL_CRMS4_SOM_BITS_REVERSAL
PBVD	Call FICA for BITS Reversal	P6	CL_CRMS4_SOM_BITS_REVERSAL

The PBRC and PBVC step types are applied during contract activation. The PBVC and PBVD step types are applied during contract cancellation.

> **i Note**
>
> Add these steps to the ODI schema used for contract distribution to Contract Accounts Receivable and Payable (FI-CA). The PBVC and PBVD step types used for the reversal of billable items must be the first steps executed in the P1 and P6 categories.
>
> The PBRC step type applied for the re-request of billable items must be executed after the contract activation step type. (If you are using the step type delivered by SAP, PBRC must be executed after the PCEA step type.) The PBRD step type must be executed after the contract deactivation step type (which is step type PCED delivered by SAP).

You make the system settings for the reversal of billable items in Customizing for *Contract Accounts Receivable and Payable* under *Convergent Invoicing* > *Basic Functions* > *Billable Items* > *Reversal of Billable Items*.

For more information about the reversal of billable items, please see SAP Note 2790730.

11.9.5 Executing Group of Changes Together

In BTMF maintenance framework Customizing, you maintain change process groups where multiple changes of the same process type can be assigned together (see *Service* > *Transactions* > *Settings for Subscription Transactions* > *Contract Changes* > *Settings for the Maintenance Framework (BTMF)*).

You define a *BTMF Process Group* under *Define Change Process Group*. For a specific process group, you assign a list of BTMF processes with execution sequence under *Define Process List*.

> **i Note**
>
> A change process group can only be used in the solution quotation API (OData service `API_BUS_SOLUTION_QUOTATION_SRV`).

11.9.6 Change Process Based Price Determination

The price determination or redetermination depends on the copy control Customizing of the item categories. With *Copy All Conditions*, all prices are copied from source documents to the target document. If a price has changed (condition record), the system does not determine when the new document is created. The price is redetermined when you select *Do not Copy Conditions* for the item category copy control.

However, you can assign specific change order transaction types to a specific change process in the BTMF maintenance framework Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Contract Changes* > *Settings for the Maintenance Framework (BTMF)*. Here, choose *Activate Change Process Define Transaction Types in Process*.

The transaction type and item category assigned is specific to a change process. So you can control the price copy and redetermination based on the change process by means of the copy control Customizing for item categories.

11.9.7 Contract Transfer

Contract transfer refers to creating new contracts as a result of a change process applied to existing contracts.

The new contract created by the change process contains a refence to the pre-existing contract, including requested changes.

A contract transfer can be defined either for item change processes or for header change processes. Header change process is defined in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Contract Changes* > *Settings for the Maintenance Framework (BTMF)*. Here, set the *Is Header* indicator under *Define Change Process*. Under the sub-node *Define Scenario Dep. Attributes*, you can set the document flow strategy to allow the creation of new contracts in new contract documents.

> **i Note**
>
> The contract transfer is supported by user interfaces, if you are using Contract Accounts Receivable and Payable (FI-CA) and Convergent Invoicing or if you are using both components in combination with SAP CC.
>
> However, contract transfer via API is not supported.

11.10 Billing and Invoicing

Billing is processed through billable items. It stores and manages the data and subsequently groups the data together with other existing consumption by the customer and summarizes the data in a billing document. This means that billing documents pre-aggregate billable items. During invoicing, one or more billing documents can then be merged into one invoice. Based on the billing document, and possibly on additional source documents from other systems, Invoicing creates an invoice for the customer and posts this total amount to the contract account of the business partner as a receivable.

You manage the receivable using the standard processes of Contract Accounts Receivable and Payable and collect the receivable from the customer (incoming payment, dunning).

Based on the nature of the subscription product, the billable items are generated or requested in Convergent Invoicing in the SAP S/4HANA system.

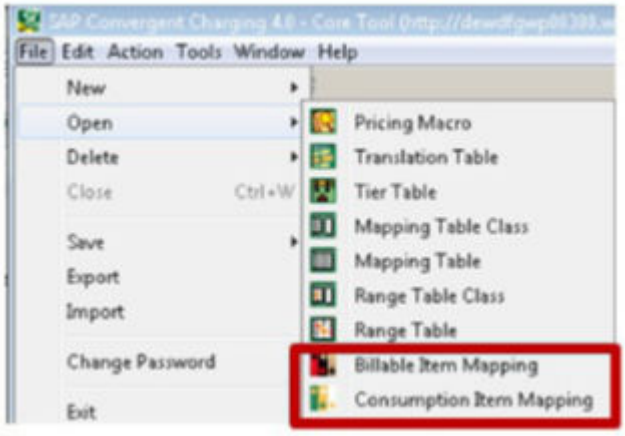
For Usage fee

Transactional data in the form of billable items originates in SAP CC as consumption data. SAP CC triggers periodic or event-based charges and creates billable items in the SAP S/4HANA system.

To enable the flow of consumption data between the SAP S/4HANA system and SAP CC, the following steps are required:

- As a general step for the consumption data, synchronize the currencies used in the SAP S/4HANA and SAP CC systems.
- For consumption data, carry out the following steps:

1. Define consumption item classes in the SAP S/4HANA system so that the consumption items correspond to the chargeable items sent by the external mediation system for the usage of a service (consumption). You can add fields to the fields used by the external mediation system to use in the charge.
2. Define chargeable item classes and the respective consumption item mapping in SAP CC, referencing the consumption item classes created in the SAP S/4HANA system.
3. Define billable item classes in the SAP S/4HANA system.
   To enable the drill-down from billable items to their respective consumption items, activate the interface components SAP CC and Link to Consumption Item.
4. Define charged item classes and the respective billable item mapping in SAP CC, referencing the billable item classes created in the SAP S/4HANA system.
5. Set up the generation of charged items in the charge plans.



Set-Up of Generation of Charged Items

For Recurring fee

Recurring fees are received by Convergent Invoicing as billing plan items from where billable items are requested. The billing plan number is updated in the FICA provider contract under tab **Contract Item: Overview**. You can either navigate to the billing plan from there or use transaction **FKKBIX_BILLPLAN_MON** to display the billing plan. Billing plan contains the billing relevant information such as amount, validity dates, request dates, and so on. Billable items can be requested from the billing plan (see menu under *Billing Plan* > *Request* > *Execute*, transaction **FKKBIXBIP_S**).

For One-Off charges

Billable items are created directly in the SAP S/4HANA system in Convergent Invoicing. The Customizing for transfer of one-off billable items is maintained in Customizing for Contract Accounts Receivable and Payable under *Integration* > *Customer Relationship Management* > *Transfer of One-Off Charges* > *Define Billable Item Classes*.

You also must maintain the account assignment and main/subtransactions Customizing under *Contract Accounts Receivable and Payable* > *Integration* > *Customer Relationship Management* > *Transfer of One-Off Charges* > *Define Account Assignments* and *Contract Accounts Receivable and Payable* > *Integration* > *Customer Relationship Management* > *Transfer of One-Off Charges* > *Define Main Transactions and Subtransactions*.

The billable items generated in Convergent Invoicing can be checked through transaction **FKKBIXBIT_MON**. Based on the selection variants, it displays the billable items. The billable items with status **Billable** can be billed from there by using the **Bill** button or by using transaction **FKKBIX_S**.

Convergent Invoicing billing documents can be invoiced again through transaction **FKKBIXBIT_MON** by processing the billable items with status **Billed, Not Invoiced** using the **Invoice** button.

11.10.1 One-Off in FIAR Scenario

The one-off product should be modeled as a sales item in FIAR scenario. No billable item is generated in this case. On submission of the subscription order, the one-off product is copied to the SD sales order, which can be processed further for SD billing and invoicing. The one-off charge is usually a fee that is not relevant for delivery. Hence, on the SD side, the corresponding item category and schedule line can be configured to process the one-off as not relevant for delivery.

> **i** Note
>
> Maintain data exchange Customizing as explained for the sales product in section Sales Product in Subscription Order [page 34].

11.10.2 CI-SD Integration with SOLINVE 800

In an FIAR scenario, a dummy contract account is required for the provider contract.

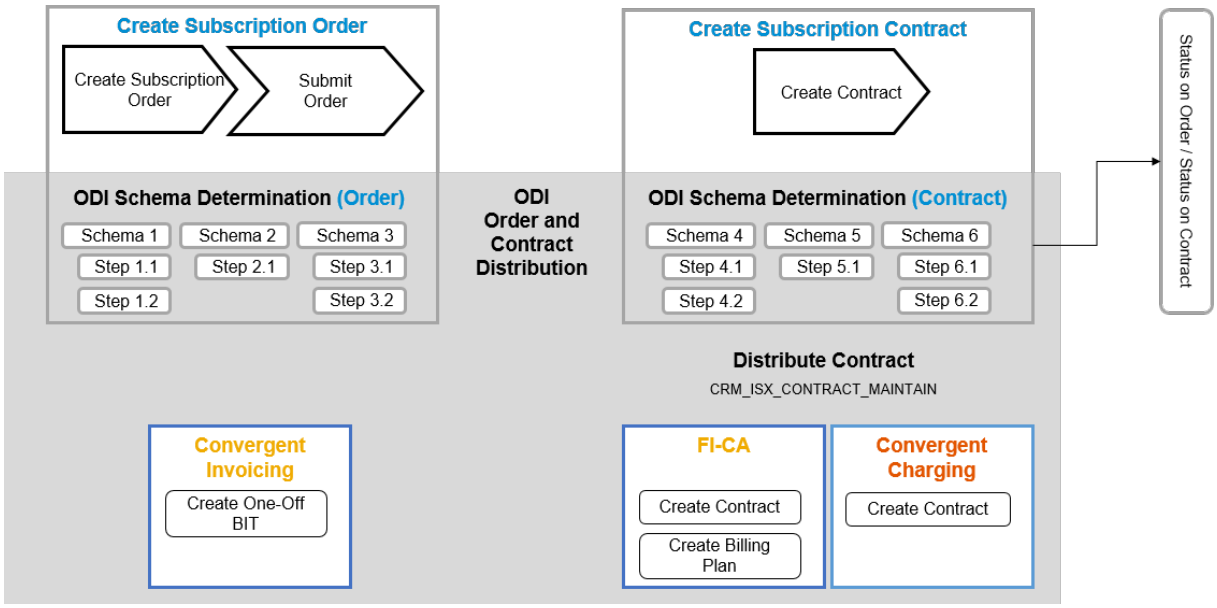
Use the transactions to create business partners (GUI) to create dummy contract accounts. Please follow SAP Note 2751387 to implement an automatic extension of the business partner to role `MKK` and to create dummy contract accounts. If you implement this SAP Note, contract accounts are created for all business partner present in a system.

If you use the *Manage Business Partner Master Data* app or an API to create business partners, you must manually extend the business partner with the `MKK` role and create contract accounts manually.

For more information about CI-SD integration using SOLINVE 800, please refer to the Customizing guide at SAP S/4HANA for Subscription Billing, Sales and Distribution Option.

12 Order Document Distribution (ODI)

The subscription contract is distributed through Order Document Distribution (ODI). ODI is a framework that allows document-specific customizable distribution and it allows customers to implement user-defined schemas and steps. It also supports delayed distribution(scheduling), dependent steps, asynchronous communication, and reprocessing.



ODI Overview

The above diagram shows the Document Distribution overview.

> ### Note
>
> You customize the ODI schema definition and step type definition under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Document Distribution* > *Define Settings for Document Distribution* >. Below are the pre-delivered schemas along with their step types.

Schema		Step Type		Category	
PO01	Subscription Order	O001	Always true activation	O1	Order Distribution
POOF	Subscription Order One-Off Distribution	ONEF	Distribute One-Off Items from Order	O1	Order Distribution
PERP	Subscription Contract Distribution	PCWA	Wait for Activation	P0	Subscription Contract waits to activate (Batch)

Schema		Step Type		Category	
		STCO	Copy Subscriber Table for alt. SUAC	P1	Subscription Contract Activation
		PCEA	Call FI-CA Message Contract Activation	P1	Subscription Contract Activation
		PCOF	Distribute One-Off Items	P1	Subscription Contract Activation
		PCWD	Wait for deactivation	P5	Subscription Contract waits for deactivation (Batch)
		PCED	Call FI-CA Message contract deactivation	P6	Subscription Contract Deactivation
0001	Subscription Contract Direct Activation	PCWA	Wait for activation	P0	Subscription Contract waits to activate (Batch)
		0011	Always true activation	P1	Subscription Contract Activation
		PCWD	Wait for deactivation	P5	Subscription Contract waits for deactivation (Batch)
		0012	Always true deactivation	P6	Subscription Contract Deactivation

Provider contracts are distributed via the joint master data distribution in Contract Accounts Receivable and Payable if SAP CC is involved. The fulfillment monitor can be checked via transaction **FKKCC_PC_MON**.

ODI schema determination happens based on the transaction type and item category combination, you customize under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Document Distribution* > *Define Settings for Document Distribution (Schema Determination)*. Below is the pre-delivered schema determination.

Trans. Type	Item Cat.	Default Schema
PRVC	PRCP	PERP
PRPA	PRPC	PERP

ODI Customizing Schema and Steps for Locking and Unlocking

Schema		Step Type		Category		Step Sequence	Prerequisite Step
PCLK	Subscription Contract Lock Unlock	CCMU	Step for Contract Update	C1	Subscription Contract Update	10	

Schema	Step Type		Category		Step Sequence	Prerequisite Step
	PCWA	Wait for activation	P0	Subscription Contract waits for activate	10	
	PCEA	Call FICA Message contract activation	P1	Subscription Contract Activation	10	
	PCOF	Distribute One-off Items	P1	Subscription Contract Activation	20	10
	PCLC	Call webservice to lock CC Contract	P1	Subscription Contract Activation	20	10
	PCLE	Transfer lock to external systems	P1	Subscription Contract Activation	30	20
	PCLS	Set lock status of subscription contract	P1	Subscription Contract Activation	40	30
	PCWD	Wait for deactivation	P5	Subscription Contract waits for deactivate	10	
	PCED	Call FICA Message contract deactivation	P6	Subscription Contract Deactivation	10	

> **i** Note
>
> In Customizing for Contract Accounts Receivable and Payable under *Basic Functions* > *Provider Contract* > *Make Central Settings for Products*, you must choose *Material Master* as product storage.

12.1 Update Status in Subscription Order Management

Multiple attempts are possible to update the status in Subscription Order Management based on config in table **CRMC_MULTICC_STG**. Hence this configuration is important.

Register a function module based on **FKK_SAMPLE_5707_SAPCRM** for event 5707 in Customizing for Contract Accounts Receivable and Payable under *Program Enhancements* > *Define Customer-Specific Function Modules*.

> **i Note**
>
> If data inconsistencies cause an error during the distribution of a provider contracts to Contract Accounts Receivable and Payable (FI-CA) or SAP CC but no response is sent to Subscription Order Management, please see SAP Note 2824632 for a solution.

12.2 Setting Distribution Scenario Parameter in ODI

The ODI step PCEA by default sets the Distribution Scenario to 'FICA and CC'. If there is no CC system and distribution needs to be made to FICA only, implement the attached corrections provided in 2816944.

Post implementation, it is to be possible to set the scenario parameter by implementing the BAdI **CRM_ISX_ERP_CONTRACT**.

In the methods **MAP_CREATE** and **MAP_CHANGE** of the BAdI implementation, the changing parameter **CV_SCENARIO_ID** should be set to **FICA**.

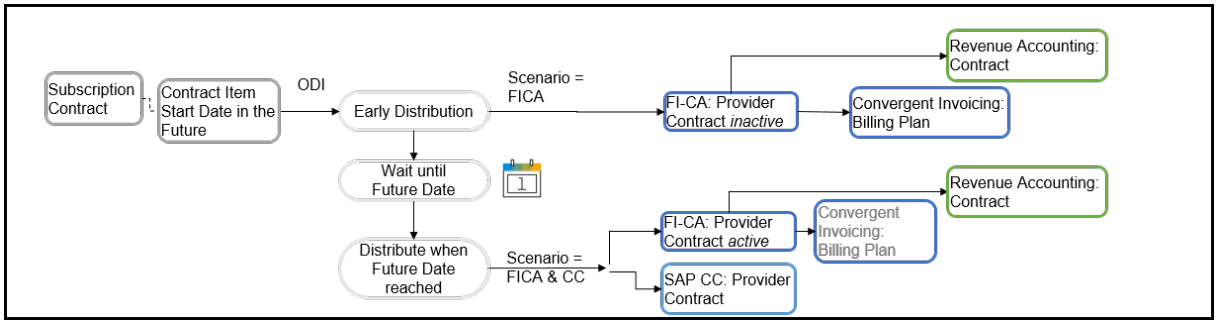
The example implementation **CRMS4_SOM_IM_FICA_ONLY_SCEN** of the BAdI can be referenced to create the actual implementation.

13 Early Distribution

For a subscription contract with a future activation date, the distribution of the contract is typically executed only on the activation date. In certain cases, it may be required that the contract be distributed at the time of creation itself, such as when Revenue Accounting and Reporting is involved. This can be reached by early distribution scenario.

If a subscription contract is created with an activation date in the future and early distribution is set, it is immediately distributed but only to Contract Accounts Receivable and Payable (FI-CA) and in status inactive. In revenue accounting the contract can be created as soon as the provider contract exists.

Later, when the activation date is reached the distribution is triggered once more with the full scenario. The provider contract is set to status active and the contract is created in SAP CC. In Convergent Invoicing the billing plan can now request recurring fees.



Data Flow During an Early Distribution

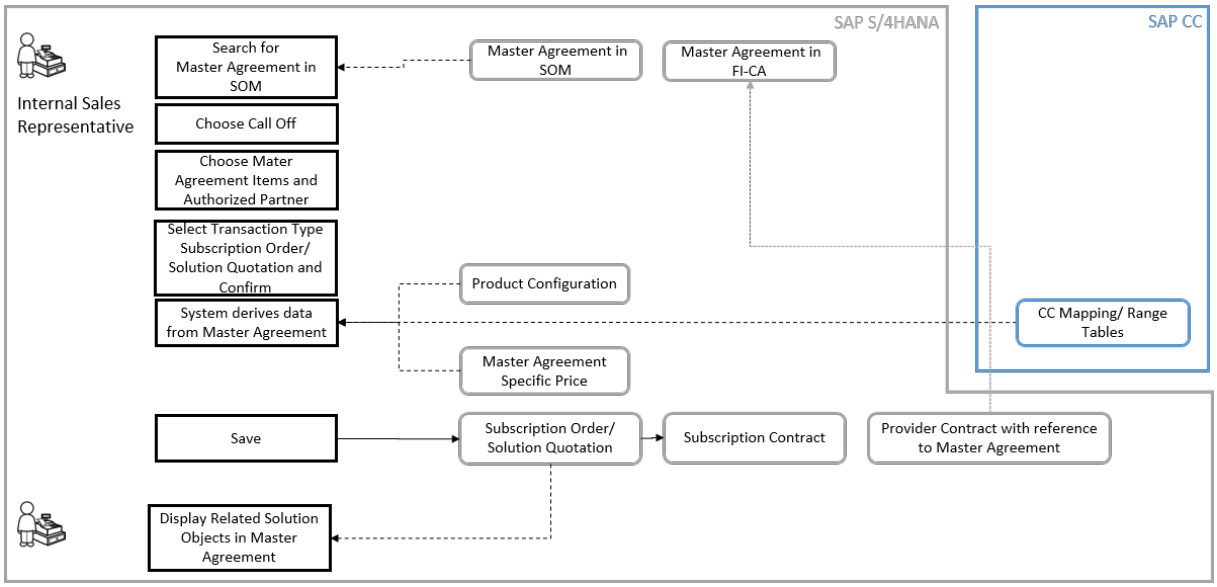
Early Distribution of Subscription Contract: ODI Customizing Schema and Steps

Schema		Step Type		Category		Step Sequence	Prereq Step
PCER	Subscription Contract Early Distribution	PCER	Call FICA Message for Early Distribution	P0	Subscription Contract waits for activate	10	
		PCWA	Wait for activation	P0	Subscription Contract waits for activate	20	10

14 Master Agreement

A master agreement is an agreement between a service provider and a customer. This feature is usually to manage B2B scenarios. In a master agreement a set of conditions is defined between the provider and the customer that takes effect in Call Off documents. A master agreement controls the following:

- Which partners are allowed to receive which products and services at what conditions
- What price a customer pays for a product or service
- Which discounts can be applied during discounting processes in SAP Convergent Invoicing
- In addition, for subscriptions which are invoiced in SAP Convergent Invoicing, in what form and to whom invoices are presented for the products or services received



Transactional Data Flow of Master Agreement

The following Customizing must be in place as a prerequisite to creating master agreements:

1. A transaction type with the leading transaction category `BUS2000267` (*Master Agreement*) must be maintained. SAP delivers `PRMA` as the transaction type for creating master agreements.

   You find the settings in Customizing under ▶ *Service* ▶ *Transactions* ▶ *Basic Settings* ▶ *Define Transaction Types* ▶.
2. An item category with the leading transaction category `BUS2000183` (*Master Agreement Item*) must be maintained. SAP delivers `PRMP` as the item category for creating master agreements. Irrespective of the type of the product the determined item category must belong to leading transaction category `BUS2000183`.

   You find the settings in Customizing under ▶ *Service* ▶ *Transactions* ▶ *Basic Settings* ▶ *Define Item Categories* ▶.
3. The item category determination must be defined.

   You find the settings in Customizing under ▶ *Service* ▶ *Transactions* ▶ *Basic Settings* ▶ *Define Item Category Determination* ▶.

As a prerequisite to creating follow-up subscription orders and solution quotations for master agreements the target transaction types must be maintained in Customizing under *Service* > *Transactions* > *Settings for Master Agreement* > *Define Target Document Type*. The document links are updated in the master agreement under *Related Subscription Objects* (Subscription order and contract) and *Related Solution Objects* (Solution Quotation).

To create a follow-up subscription order or solution quotation in press *Call Off* in the *Manage Master Agreements* app (delivered with the `SAP_BR_INTRNAL_SALESREP_SOM` business role).

If a valid master agreement exists for a sold-to-party and product combination, the master agreement is automatically determined when a subscription order or solution quotation is created .

You maintain the pricing for master agreements in SD pricing in SAP S/4HANA. SAP delivers the condition types`PSMB` (monthly subscription fee) and `PSPB` (bundle price). You can use them in master agreements but you must make sure that the same condition types are part of the pricing procedure the system determines during the creation of subscription orders or solution quotations. To maintain the master agreement specific price, select the appropriate condition type in transaction `VK11` and then select the *Doc. Cat./ID/ItmNo. Doc/ Material* keyy combination in the following pop-up.

You can use the Business Add-In (BAdI) `CRM_PRVMA_DATE_DETERMINE` to check the validity date of a subscription order or solution quotation with reference to a master agreement. The date must be within the validity period defined in the header of the referenced master agreement. If the check fails, the system sends an error message.

You can use this Business Add-In (BAdI) `CRM_PRVMA_PARTNER_CHECK` to check whether a business partner is valid in a subscription order with reference to a master agreement. In addition, you can return all valid business partners to display as input help. Using this BAdI you can also determine all business partners that are allowed in a sharing contract. The BAdI uses the business partner validation rule as filter criteria. This information is passed to the BAdI through the master agreement item against which the checks are executed. You enter the partner validation rules you want to apply in Customizing under *Service* > *Transactions* > *Settings for Master Agreement* > *Define Partner Validation Rules*. If you have defined your own partner validation rules or if you want to change the standard checks, you must create an implementation for this BAdI and implement the methods of the `IF_CRM_PRVMA_PARTNER_CHECK` interface.

14.1 Master Agreement in Contract Accounts Receivable and Payable (FI-CA)

Master agreements are distributed to Contract Accounts Receivable and Payable (FI-CA) when they are released if the data exchange Customizing is maintained for the `MAGR` identifier under *Service* > *Transactions* > *Data Exchange in Service* > *Define Custom Handler Classes for Forward Data Exchange*. Number ranges you maintain in Customizing for *Contract Accounts Receivable and Payable* under *Basic Functions* > *Master Agreement* > *Define Number Range*. You display master agreements in transaction `FP_MA3`.

You add entries to the master agreement that are needed for the processes for invoice creation or for subsequent discounting. You make these entries in the form of the following agreements:

- Agreement for Creation of Invoices (Invoice Agreement)

- Agreement for Discounting (Discount Agreement)
- Agreement for Creation of Invoicing Lists

For more information, go to Master Agreement

> **i Note**
>
> In Subscription Order Management, these agreements are displayed in the master agreement under *Agreements*. If Contract Accounts Receivable and Payable has not been activated in Customizing under *Service* > *Master Data* > *Contract Account* > *Define Basic Settings*, only discount agreements are displayed.

14.2 Customer Hierarchies in Master Agreements

You can use SD customer hierarchies in master agreements via the *Authorized Contract Partner* and *Authorized Sold-To Party* partner functions. The sytem opens the customer hierarchy search when you select the number type *CN - Customer Hierarchy Node*. When you add a hierarchy, the hierarchy node ID is assigned to the partner function.

> **i Note**
>
> You create an SD customer hierarchy using transaction `VDH1N`.

When the system creates a follow-up subscription order or solution quotation from a master agreement via the *Call Off* function, the authorized partner list shows all partners of a customer hierarchy node including the partners added without the hierarchy node ID.

If a valid master agreement for the hierarchy node ID and product combination exists, the system automatically determines the master agreement when you create a subscription order or solution quotation for a business partner in the customer hierarchy node.

The SD customer hierarchies table (`KNVH`) includes the *GUID of a customer hierarchy node* and *ID of a customer hierarchy node* fields which are updated when the customer hierarchy is maintained or modified in SD, provided the number range for customer hierarchies is maintained.

You can update existing customer hierarchies with the GUID and ID of customer hierarchy nodes using the `KNVH_GEN_ALT_KEY` report.

You can use the BAdI `BADI_CHK_CUST_HIER_REF` to determine whether a specific customer hierarchy is referenced by other objects.

> **Example**
>
> When you make new assignments to customer hierarchies, the system identifies overlap with existing assignments and overrides the existing with the intended assignment. You can use the BAdI `BADI_CHK_CUST_HIER_REF` to check whether a customer hierarchy that is to be overwridden is referenced by other objects.

The BADI method `IS_ORDER_EXISTS` returns messages in the `CT_RETURN` parameter. They are displayed in the hierarchy maintenance (transaction `VDH1N`).

To prevent changes from being saved to the customer hierarchy, the `CV_EXIST` parameter must be set to true (Boolean X).

If you do not require a consistency check, deactivate the BAdI `BADI_CHK_CUST_HIER_REF`.

> **i Note**
>
> In Contract Accounts Receivable and Payable master agreements reflect the customer hierarchy partners on the *Customer hierarchies* tab. Only partners of the `MKK` business partner role are mapped to the master agreement in Contract Accounts Receivable and Payable.
>
> Discount agreements, invoice and invoicing list agreements are mapped to the customer hierarchy node.

14.3 Price Agreements in Master Agreements

The price agreement assignment is displayed in the master agreement item. You can only maintain prices for the condition types `PSMB` and `PSPB` delivered by SAP. Prices added or modified in these condition types are reflected in SD pricing.

14.4 Products in Master Agreements

If a product is exclusively offered as part of master agreements where subscription orders or solution quotations always reference a master agreement, you set the product type *Master Agreement Product* for such products.

You define the product type, such as `SUBS`, in Customizing under *Logistics – General* > *Material Master* > *Basic Settings* > *Material Types* > *Define Attributes of Material Types*.

In Customizing under *Service* > *Master Data* > *Settings for Subscription Master Data* > *Subscription Product-Specific Data* > *Assign Product Purpose to Product Types* you then assign the *Master Agreement Product* purpose to the product type .

When you try to assign products with the *Master Agreement Product* purpose to a subscription order or solution quotation the document runs into an error requesting a master agreement reference.

15 Subscription Items in Solution Quotations

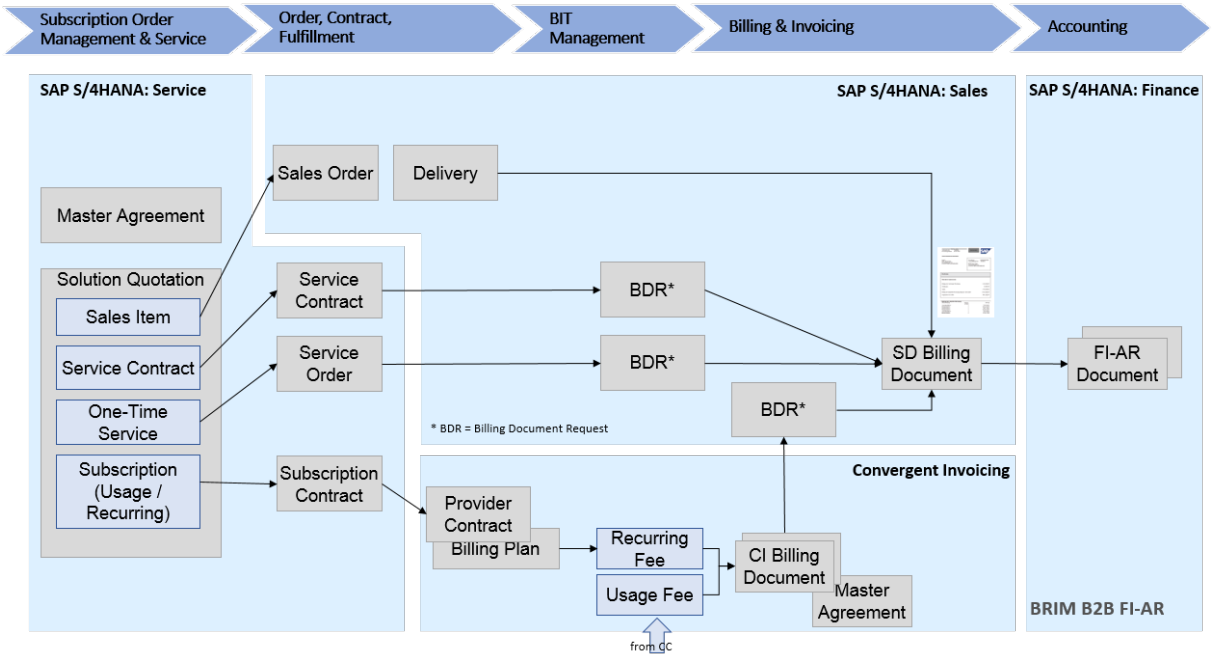
Solution Quotations are legally binding offers with fixed conditions, made to a customer for the performance of different kinds of services, subscriptions and for the delivery of goods.

With a solution quotation you can offer solutions to your customer consisting of combinations of different types of products (physical goods, services, subscriptions). These combinations of products are modeled as product bundles in your master data. When you enter product bundles as items in a quotation, the bundle components are displayed automatically as subitems. Once a quotation has been released and accepted, follow-up transactions (orders, contracts) are generated automatically.

Solution quotations are created with sales items, service order items, service contract items, subscription items, one-off items and product bundles containing such items.

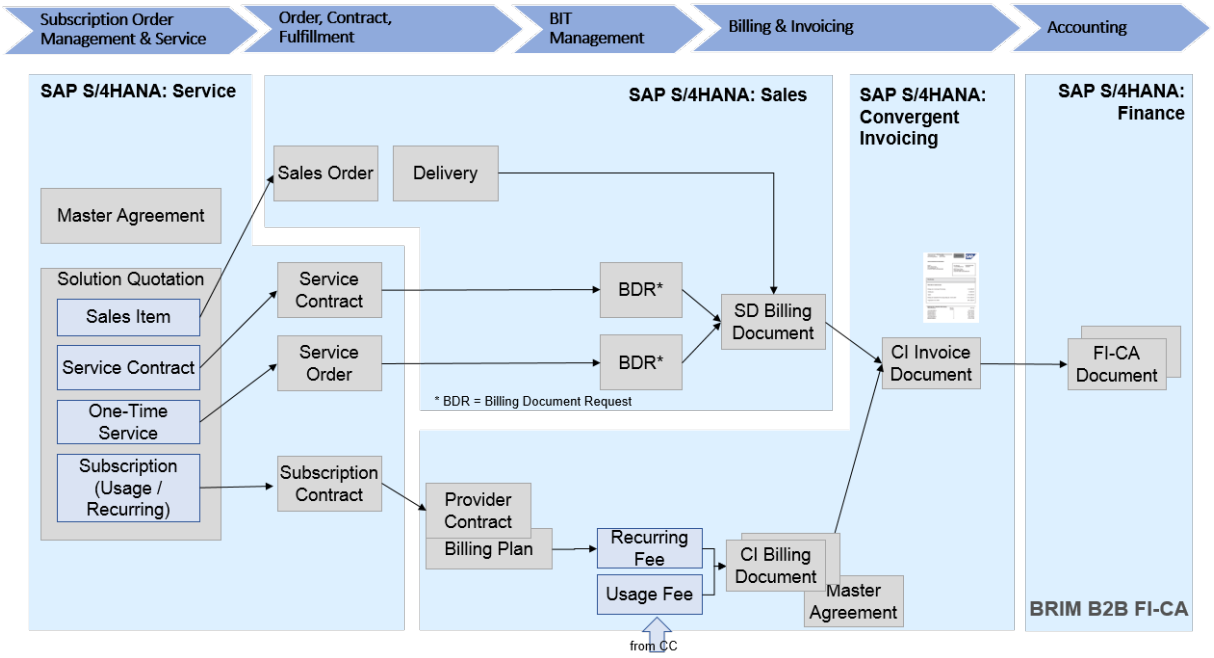
Once solution quotations are accepted, follow-up objects such as the service contract, service order including sales item, and subscription contract are created.

The following graphic illustrates the process if you are using Accounts Receivable Accounting (FI-AR).



B2B Process for Solution Quotations

The following graphic illustrates the process if you are using Contract Accounts Receivable and Payable (FI-CA).



B2C Process for Solution Quotations

> ⚠ Caution
>
> When a date type is added to a date profile in Customizing under *Service* > *Basic Functions* > *Date Management* > *Define Date Profile* you can maintain a reference (system, customer, user) that defines in which time zone this date is maintained.
>
> Please make sure that these settings are consistent for solution quotes and subscription contracts. The system stores all timestamps in the UTC time zone. They are converted to the user's time zone based on the Customizing settings when they are displayed. If your Customizing settings are not consistent, you may see a different date and time in a solution quote and in the respective subscription contract.

15.1 Change Quotation

You can execute one or more change processes for a subscription contract using the OData service `API_BUS_SOLUTION_QUOTATION_SRV` for solution quotations by assigning a change process group to the subscription item.

Such items with a change process group are processed asynchronously by the PPF action `CRMS4_SOM_PROCESS_CHANGE_QUOTE`, after the solution quotation is accepted. Therefore, you must schedule report `RSPPFPROCESS` periodically.

Errors that occur during this asynchronous processing are stored in the PPF action log. In addition, they are stored separately for each item in the business application log (BAL) under object `SOM`, sub-object `QCP`, and the quotation item GUID as external ID. The BAL log can be accessed from an external system by means of the OData service `APL_LOG_MANAGEMENT_SRV`.

16 Allowances

Allowances are configured in SAP CC and can have one of the following types:

- Credit Bucket
  A credit bought by (or given to) a customer to use one or several services. It can be expressed as a monetary or non-monetary amount. It is valid for a certain period of time

  > **Example**
  >
  > 3GB of 4G data valid for 30 days

- Spending Limit
  A right for a customer to use a service or a group of services up to a certain limit within a period of time. Limits are usually defined by the customer and can be expressed as a monetary or non-monetary amounts

  > **Example**
  >
  > Maximum of 100 SMS per day

- Promotion
  A rule to increase the capacity of a customer to use a service. Promotions can be limited in quantity and/or in time
  Example: 15% discount on national voice calls (valid for 2 weeks)

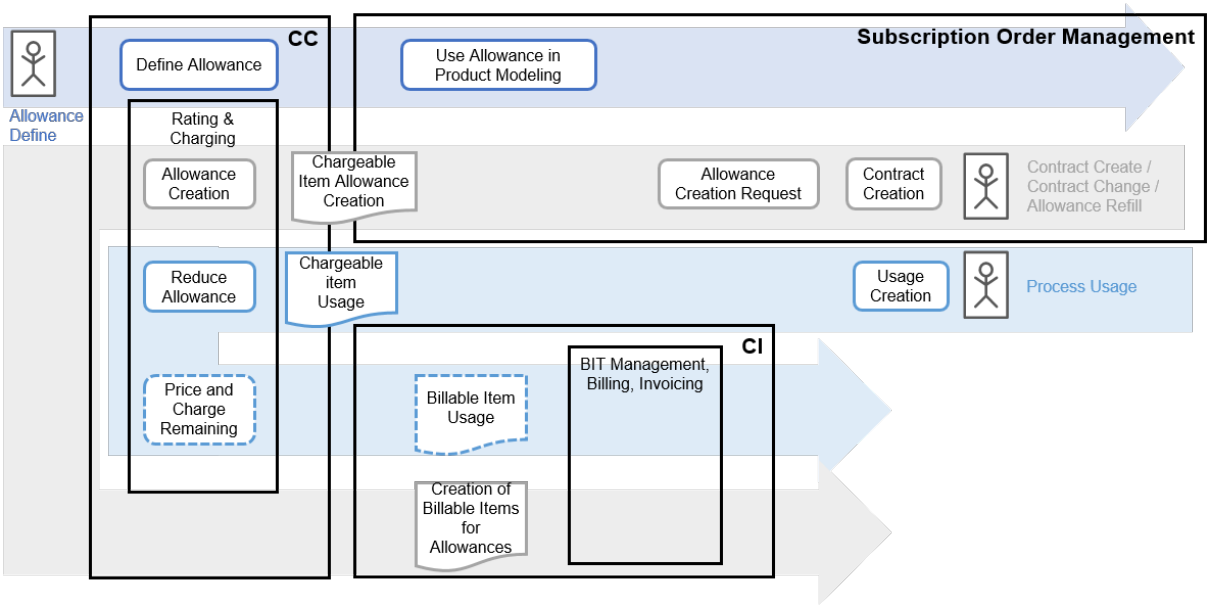
You configure allowances in SAP CC as follows:

1. Create the predefined chargeable item class `ALLO`.
2. Customize the allowance interface.
3. Create an allowance definition table class.
4. Create an allowance definition table.
5. Configure the allowance creation in charge plans.

In SAP S/4HANA, you manage allowance definitions with the *Manage Mapping Tables* app, allowance definition groups you manage with the *Manage Allowance Definition Groups* app.

When you define cross catalog mapping for the subscription product using the *Manage Subscription Specific-Product Data* app you assign the allowance definition group to an allowance definition of a charge plan.

For subscription orders and subscription contracts to use allowances you must set the *Show Allowance* indicator in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Define Settings for Item Categories*.



Process Flow for Allowances

You can use the `CRM_ISX_ALLW_CREATE_WS` Business Add-In (BAdI) to adjust the web service call of the allowance creation. The BAdI Implementation consists of the following methods:

- `ADJUST_CHARGEABLE_ITEM_CLASS`
  The chargeable item class used can be adjusted. Use this method if you want to use a different chargeable item class than specified in the coding (constant `GC_CHARGEABLE_ITEM_CLASS`).
- `ADJUST_PROPERTIES`
  The properties of the web service call can be adjusted.

16.1 Creation of the Predefined ALLO Chargeable Item Class in SAP CC

Allowances in SAP CC are created by sending charging requests for chargeable items. The chargeable item contains the identifiers of the allowance definition used to initialize the allowance. As a prerequisite, the predefined `ALLO` chargeable item class must exist in SAP CC and it must contain the predefined fields `ALLOW_DEF_ID` (identifier of the allowance definition used to create the allowance) and `ALLOW_START_DATE` (date on which the allowance must be activated). The charges must use this chargeable item for creating the allowances from the allowance definition ID. The created allowance must be initialized from the specified allowance definition and must be active on the specified date.

You must create the corresponding `ALLO` consumption item class in Convergent Invoicing to enable the loading of the consumption items into Convergent Invoicing. Convergent Invoicing provides the corresponding interface component `ALLO_CREATE` which also contains the fields `ALLOW_DEF_ID` and `ALLOW_START_DATE`.

The SAP CC Core Tool provides you with the `ALLO` chargeable item template to create a chargeable item in SAP CC. Proceed as follows:

1. Open the `ALLO_chargeable_item_class.xml` XML file located in the installation directory of your Core Tool in the templates folder.

2. Replace `${catalog}` with the name of your catalog.
3. Save and close the XML file.
4. Log on to the Core Tool in SAP CC.
5. Import the chargeable item class.
   For more information, see the documentation of the Core Tool
6. Create the `ALLO` consumption item class in Convergent Invoicing (optional step)
7. Create the corresponding consumption item mapping in the SAP CC Core Tool (optional step)

> **i Note**
>
> Perform step 6 and step 7 only if you store consumption data in Convergent Invoicing.

16.2 Customizing of the Allowance Interface in SAP CC

To be able to display allowances and allowance plans in SAP S/4 HANA, they must have a predefined parameter of type String named `ALLOW_DEF_ID`. As a main parameter of the allowances, `ALLOW_DEF_ID` must be initialized when the allowance is created and must be used to customize the allowance.

To include the `ALLOW_DEF_ID` parameter in allowances, proceed as follows:

1. Log on to the Core Tool of SAP CC.
2. In the menu, choose *Tools Allowance Interface*.
3. Add a new line and then set the following column values:

Column	Value
Name	`ALLOW_DEF_ID`
Type	*String*
Description	The ID of the allowance definition from which the allowance has been initialized
Default Value	*NotSet*

4. In the menu, choose *File Save* to save the allowance interface.

16.3 Creation of an Allowance Definition Table Class in SAP CC

Allowance Definitions are managed as mapping tables stored in SAP CC. The structure of the allowance definition tables is defined by using mapping table classes that must contain the following:

- An input column of type *String* named `ALLOW_DEF_ID`
  This column must contain the identifier of the allowance definition.
- An output column of type *String* named `ALLOW_DEF_DESC`
- An additional info of type *String* named `SAP_DATA_TYPE` set to *AllowanceDefinition*

The following table shows an example of an allowance definition table class:

Column	Name	Type	Description
Input Column 1	`ALLOW_DEF_ID`	*String*	The identifier of the allowance definition
Output Column 1	`ALLOW_DEF_DESC`	*String*	A human readable short description of the allowance definition
Output Column 2	*BucketQuantity*	*Number*	The quantity of the allowance
Output Column 3	*Validity*	*Number*	The validity period in days of the allowance

This example shows that the purpose of an allowance definition is to define the quantity and the validity period of an allowance limited in quantity and in time.

The Core Tool provides you with a template to create an allowance definition table class in SAP CC. Proceed as follows:

1. Open the `allowance_definition_table_class.xml` XML file located in the installation directory of the Core Tool in the templates folder.
2. Replace `${catalog}` with the name of your catalog.
3. Save and close the XML file.
4. Log on to the Core Tool of SAP CC.
5. Open the mapping table class from the XML file. For more information, see the documentation of the Core Tool.
6. Rename the displayed mapping table.
7. Enter a description for the mapping table.
8. Add input and output columns.
9. Save the mapping table class.

16.4 Creation of an Allowance Definition Table in SAP CC

Allowance definitions are stored in the allowance definition table that is a mapping table which contains:

- An allowance definition table class
- Additional info of type *String* named `SAP_DATA_TYPE` set to *AllowanceDefinition*

> **i Note**
>
> Before you can use an allowance definition table in SAP S/4 HANA, you must create it in SAP CC.

The following table shows an example of an allowance definition table:

ALLOW_DEF_ID	Start	End	BucketQuantity	Validity
A01	201x	201x	100	30
A02	201x	201x	600	60
A03	201x	201x	1000	60

A01 defines a credit allowance limited in quantity to 100 units and in time for a period of 30 days. The allowance definition is valid for a period of one year.

The Core Tool provides you with a template to create an allowance definition table in SAP CC. Proceed as follows:

1. Open the `allowance_definition_table.xml` XML file located in the installation directory of the Core Tool in the templates folder.
2. Replace `${catalog}` with the name of your catalog.
3. Replace `${mappingTableClass}` with the identifier of an allowance definition table class.
4. Save and close the XML file.
5. Log on to the Core Tool of SAP CC.
6. Open the mapping table from the XML file. For more information, see the documentation of the Core Tool.
7. Rename the displayed mapping table.
8. Add allowance definitions as mapping table rows if necessary.
9. Save the mapping table class.

16.5 Configuration of the Allowance Creation Plans in SAP CC

To create an allowance from the allowance definition, you must first design the corresponding charge that creates an allowance in response to the reception of an `ALLO` chargeable item. You then add the charge to charge plans as a charge plan item. The charge plan item can have several user service identifiers, but one user service identifier must match the following pattern so that the SAP S/4 HANA system is able to identify which user service identifier must be used to activate the charge creating the allowance from the allowance definition.

`ALLOW_* where *` stands for 0 to 6 characters. For instance, `ALLOW_` and `ALLOW_TUT` are valid user service identifiers.

> **i Note**
>
> The charge plan item must have one and only one user service identifier matching the above pattern. The charge plan must have at least one mapping table ID of type parameter initialized with a default allowance definition table instance.

16.6 Maintaining Allowances in Subscription Products

As allowance definition details are not replicated from SAP CC to SAP S/4 HANA, most actions regarding allowances in SAP S/4 HANA require an active connection to SAP CC. During the following actions, allowance information is requested from or sent to SAP CC:

1. During the maintenance of allowance definition groups when:
   - Selecting an allowance definition table ID
   - Adding allowance definitions to a group
   - Displaying allowance definition details
2. During product maintenance when displaying the content of the allowance definition table
3. During order and contract maintenance when:
   - Displaying allowance definition details of allowances included in a provider order
   - Automatically activating allowances after contract creation or contract change processes
   - While executing the contract process Allowance Refill to display allowance definition details and activate allowances
4. When displaying allowance details for active contracts
5. The following web service proxies are used during communication with SAP CC:
   - `CO_CRMS4_SOM_CC_V3_CATALOG_SER`
   - `CO_CRM_ISX_CC_CHARGEABLE_ITEM`
   - `CO_ISX_ALLOWANCE_MANAGEMENT_V1`

These web service proxies require valid logical port customizing. Also, you have to customize the order distribution infrastructure to perform the step *Call Message for Allowance Creation* (`ALLW`). The implementation delivered for this step calls the corresponding web service in SAP CC. Proceed as follows:

1. Configure the logical ports for web service calls.
2. Configure the order distribution infrastructure.
   You can use the delivered schema *Subscription Contract with Allowance* (`PCAL`)
3. Maintain allowance definition groups and allowance assignments to products.

16.7 Activation of OData Services

On the Fiori server you must activate the `CRMS4_SOM_ADG_SRV` (*Manage Allowance Definition Group*) OData service and assign a system alias in transaction `/IWFND/MAINT_SERVICE`.

For more information on how to set up the Fiori Launchpad and how to activate services, see the documentation of SAP NetWeaver. In the application help for UI Technologies in SAP NetWeaver go to theAdministration Guide for the SAP FIORI Launchpad section.

17 Account Split

SAP CC creates one subscriber account for each business partner for master data distribution in the standard system. If several provider contracts are assigned to business partners, this can leader to longer runtimes during rating. So Contract Accounts Receivable and Payable creates a separate customer account for each provider contract in SAP CC so that the workload can be distributed to the raters more effectively. Contract Accounts Receivable and Payable receives the information about the several subscriber accounts that are to be created for a provider contract in SAP CC from the front-end system.

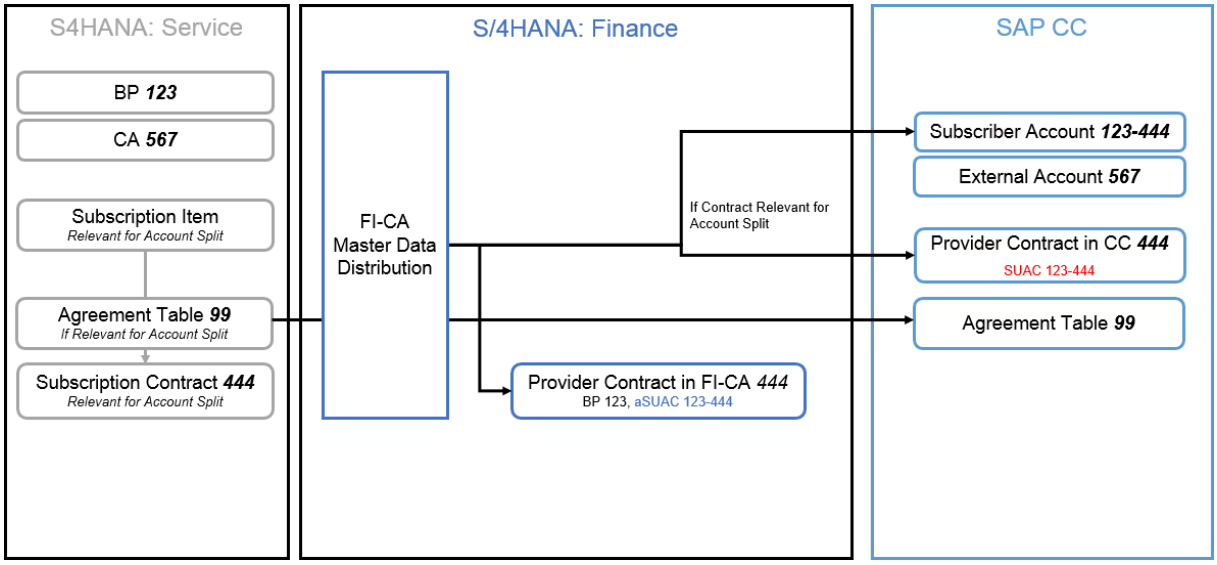
The relationship is mapped using agreement tables in SAP CC. Agreement tables are mapping or range tables which are shared between multiple objects with a specific relation. This relation can either be a subscriber account identifier, so that all provider contracts with different alternative subscriber accounts belonging to one specific subscriber account can share the same table. Or the relation can be a master agreement ID, so that all provider contracts that reference this master agreement can use the same agreement table.

You specify whether account split is relevant in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Define Settings for Item Categories* or using the BAdI `CRMS4_SOM_BADI_CC_ACC_SPLIT` you find in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Integration* > *Integration with Convergent Charging* > *Business Add-Ins (BAdIs)* > *BAdI: Determine Split for Subscriber Account in SAP CC*. The setting is considered during the creation of subscription orders and solution quotations. The information is passed on to the provider contract in Contract Accounts Receivable and Payable and the subscription contract in SAP CC.

With the *Manage Mapping / Range Table* app, you create an agreement table for a specific business partner in SAP CC. You create the mapping table is created as an agreement table.

If you search for tables in SAP CC and enter the subscriber account as a search criterion, the system returns agreement and subscriber tables. If you search without entering a subscriber account, the system returns catalog tables and agreement tables for master agreements.

You assign catalog or agreement tables for a specific business partner to subscription items. Always create a redefined table in a subscription order as a subscriber table. If the account split has been activated, you must add the STCO (*Copy Subscriber Table*) step type, which copies the subscriber table to the newly-created subscriber account, to your ODI schema.



Process Flow for Account Split

17.1 Reading Counters in SAP CC

In SAP CC, counters, among other things, reflect the balance of free units granted to a customer. You define counters as part of a charge or charge plan in SAP CC and use them during rating and charging to determine prices.

You access counters in SAP CC by using the Web service **ContractStateManagementServices**. Using the operation **chargingContractStateRead**, you can read current counter values.

In the subscription contract, counters can be displayed on the contract main item. Therefore, in Customizing for the item category, the indicator **Show Counter** must be set. To display counter values in SAP S/4HANA, you must configure the consumer proxy **CO_ISX_CC_CONTRACT_STATE_MANAG** in the SAP S/4HANA system accordingly. The system accesses this proxy by using the RFC function module **CRM_ISX_CONTRACT_READ**. The parameter IV_CONTRACT_ID can pass the contract ID to the function module **CRM_ISX_CONTRACT_READ**. All kinds of counters are returned in parameter ET_CHARGING_ITEM_COUNTER_ALL. Parameter ET_CHARGING_ITEM_SHAREDCOUNTER contains shared counters. You can define the counters to be displayed by using BAdI **CRM_ISX_PROV_CC_COUNTER** and the Customizing settings under *Contract Accounts Receivable and Payable* > *Basic Functions* > *Provider Contract* > *Counter on Provider Contract* > *Define Views for Display*. By default, all counters are displayed.

18 Consumption Data

18.1 Flow of Consumption Data

From (unrated or rated) chargeable items or refill requests, SAP CC creates charging output data (that is, charged items, refill records, ABM notifications, and unrated chargeable items) and mass data files. SAP CC then reads and maps these files to the format of the respective billable item class or consumption item class by calling the respective RFC in the SAP S/4HANA system. Then SAP CC bulk loads the data as billable items and consumption items into the SAP S/4HANA system. If you connect multiple FI-CA systems to one SAP CC system, SAP CC manages the item storage and transfer for the relevant systems based on information available in Subscription Order Management and based on JCo destinations.

To ensure the completeness of the chargeable and charged items transferred from SAP CC to the SAP S/4HANA system, you should regularly trigger offline charging, as well as the calculation of recurring charges. You achieve the latter by regularly taking the appropriate activation steps for provider contracts in SAP CC.

The SAP S/4HANA system establishes the RFC connections (depicted in the second figure above) every time the bulkloader is started in SAP CC. This means that the frequency with which you start the bulkloader in SAP CC has a direct impact on the data available for further processing in the SAP S/4HANA system.

For more information, see section Billing and Invoicing [page 46].

18.2 Storage of Consumption Data

You store the original consumption information in Convergent Invoicing in the SAP S/4HANA system. The SAP S/4HANA system stores the consumption data in the form of consumption items both before and after rating. Storing the consumption data in the SAP S/4HANA system enables you to do the following:

- Work with scaled prices
- Trigger rerating in SAP Convergent Invoicing
- Use partner settlement
- Correct consumption items in the SAP S/4HANA system

To implement the storage of consumption data in Convergent Invoicing in the SAP S/4HANA system, proceed as follows:

To set up data storage of consumption items in Convergent Invoicing for a new installation of SAP S/4HANA when Convergent Invoicing is integrated with SAP CC, follow these steps:

1. In SAP CC, activate data storage of consumption items in Convergent Invoicing.
2. In Convergent Invoicing, configure and activate consumption item classes that can receive the data over appropriate interfaces.
3. Replicate the consumption item classes as chargeable item classes and charged item classes to SAP CC. Check and configure the mapping of each chargeable item class and each charged item class in CC.

4. Configure at least one logical port for each dispatcher provided by SAP CC for the Web services Charging and Recharging.

If you have already integrated Convergent Invoicing in SAP S/4HANA with SAP CC and you want to move data storage from SAP CC to Convergent Invoicing, then proceed as follows:

1. In SAP CC, remove the link between the chargeable item class and the chargeable item package.
2. In SAP CC, activate the synchronization of consumption item classes.
   Ensure that the interface component Link with Consumption Items (CIT_REF) is active in Convergent Invoicing. This interface component establishes the link between consumption items and the corresponding billable item class.
3. Update the mapping of this billable item class in SAP CC.
4. Configure consumption item classes in Convergent Invoicing based on the chargeable item classes used.
5. In SAP CC, synchronize the chargeable item classes with the consumption item classes configured in Convergent Invoicing.
6. In SAP CC, activate data storage of consumption items in Convergent Invoicing. Enter the date, starting from which, you want to store consumption items in Convergent Invoicing in the SAP S/4HANA system. In Customizing for Contract Accounts Receivable and Payable, choose *Convergent Invoicing* > *Integration* > *SAP Convergent Charging* > *Enter Specifications for the Transition of Data Storage*.
7. In SAP CC, configure the logical ports for the Web services Charging and Recharging.
8. In Convergent Invoicing, configure a logical port for the Web services Charging and Recharging and for the consumer proxy. Enter the date from when you want to be able to process consumption items from Convergent Invoicing (end of the transition phase).
9. In Customizing for Contract Accounts Receivable and Payable, choose *Convergent Invoicing* > *Integration* > *SAP Convergent Charging* > *Enter Specifications for the Transition of Data Storage*.
10. In SAP CC, activate rerating from within Convergent Invoicing.
11. In SAP CC, activate archiving of the charged items still stored in the Batch Acquisition and Rating Toolset (BART). By relieving the data load on BART, which you achieve by the transition of data storage, you can retain snapshots for counters in SAP CC over a longer period than before. If needed, extend the residence time for counter snapshots.

18.3 Rating of Consumption Data

SAP CC receives unrated consumption items from a technical system and enriches them with information related to provider contracts or subscriptions. SAP CC then transfers the unrated consumption items to Convergent Invoicing. Convergent Invoicing stores and manages the unrated

consumption items, and then sends them back to SAP CC for rating.

> **i** Note
>
> You can create missing consumption items in Convergent Invoicing manually.
>
> To enhance the input data for rating in Convergent Invoicing, use event 8175.
>
> To support load balancing when you are using multiple logical ports for the Charging and Recharging Web services, the rating process iterates through all logical ports (dispatchers responsible) for each rating or rerating unit. If a call to a dispatcher fails, the rating process tries to use the next available dispatcher to

execute the Web service. The rating process repeats calling the next available dispatcher until either the call succeeds, or all ports have returned an error.

For more information about rating initiated by Convergent Invoicing, see the “Rating” chapter of the Convergent Invoicing documentation.

19 Sharing Contracts

To share counters during rating in SAP CC within one contract or across several contracts you can maintain a name space for each counter of a charge plan using the *Manage Subscription Product-Specific Data* app. Counters with the same ID and the same name space will be shared.

The allowed name spaces you define in Customizing under *Service* > *Master Data* > *Settings for Subscription Master Data* > *Subscription Product-Specific Data* > *Cross Catalog Mapping* > *Define Product Settings for Counter Sharing*.

Sharing Contracts

To allow that counters or allowances are shared across contracts during rating in SAP CC you must create a sharing contract (which is the root contract) and shared contracts (which are dependent contracts).

The transaction type for the sharing order or sharing contract must be assigned to the document purpose which is the *Sharing Order* in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Define Settings for Transaction Types*.

In a sharing contract you can only use a subscription product with the product purpose *Sharing Product*. In a shared contract you can assign the reference to a sharing contract only if the product used in the shared contract and the product used in the sharing contract are allowed for sharing.

In the *Manage Subscription Product-Specific Data* app you define which products can be shared under *Shared Products*. Alternatively, to define which products can be shared, you can use the BAdI `CRM_PROVIDER_DET_SHARING_PROD` in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Counter Sharing* > *BAdI: Determine Allowed Products for Sharing Contract*.

If you want to create a sharing contract with reference to a master agreement, the transaction type for the sharing contract must be maintained as target document type in Customizing under *Service* > *Transactions* > *Settings for Master Agreement* > *Define Target Document Type*.

Shared Allowances

In SAP CC you can define shared allowances which can be shared between independent contracts, by referencing its share ID.

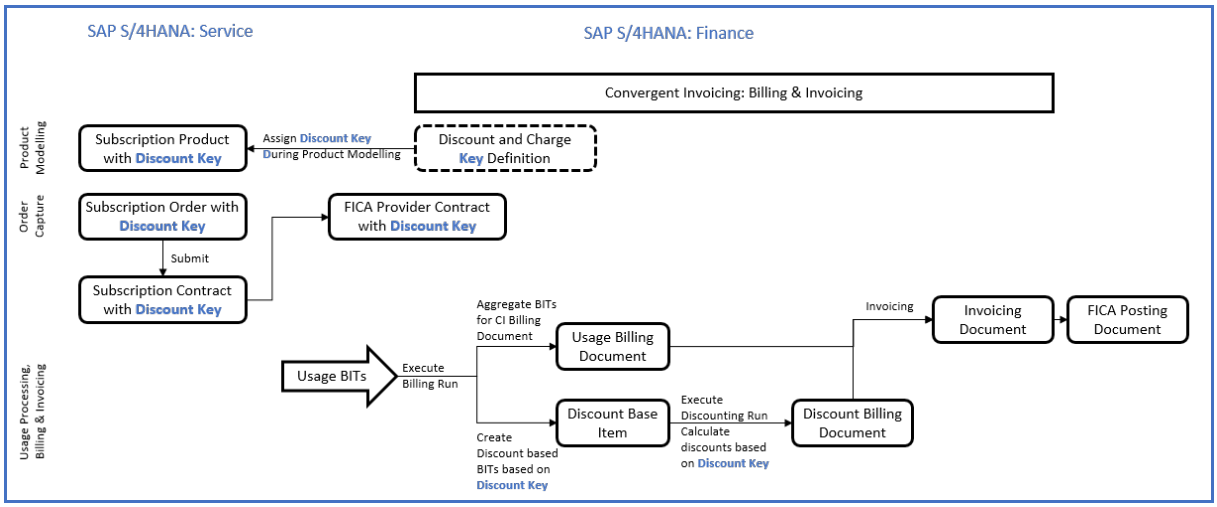
Alternatively, in the *Manage Subscription Product-Specific Data* app you can set an indicator in the cross catalog mapping version if shared allowances are used. If this indicator is set, you can define a charge plan parameter as share ID. During order creation you assign the order to a sharing group.

Using the *Manage Sharing Groups* app, you define sharing groups that can be used during order creation. The sharing group and the share ID defined in the product are used as identifiers for a shared allowance. The *Manage Sharing Groups* app displays in which contracts or master agreements a sharing group is used.

To be able to use the *Manage Sharing Groups* app, you must activate the `CRMS4_SOM_SHGR_SRV` OData service on the Fiori server and assign a system alias in transaction `/IWFND/MAINT_SERVICE`.

20 Discounts and Charges on Billable Items

Discount are processed in Convergent Invoicing. You make the appropriate settings in Customizing for Contract Accounts Receivable and Payable under *Convergent Invoicing* > *Billing* > *Additional Functions* > *Discounts and Charges on Billable Items*. Discount and charge keys you define here, you assign to subscription products during product modeling using the . They are determined automatically or you can add them manually depending on the system settings. Discount keys are stored in subscription contracts and transferred to the provider contract.

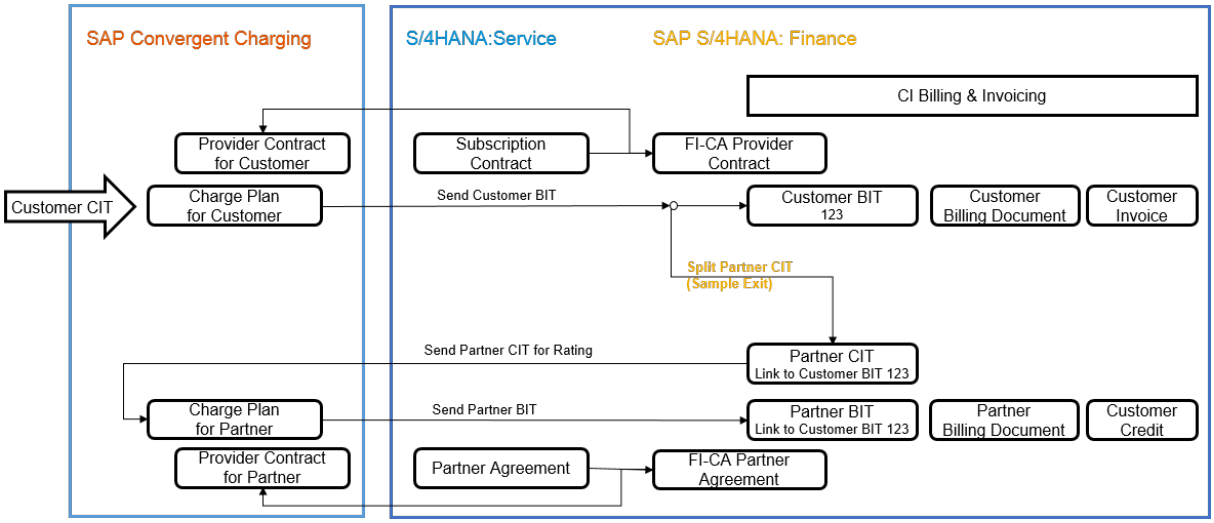


Process Flow of Discounts and Charges

21 Partner Settlement

With traditional industries rapidly evolving their business models to service-based models, a revenue sharing business model is becoming increasingly important. In such a model, service providers who have contractual agreements with end customers either share part of their revenue with or pay certain royalties to their content providers. For this reason, a service provider closes a partner agreement with the content provider. The partner agreement holds the conditions negotiated between the service provider and the content partner, such as the service and the revenue split. When an end customer purchases a service, the content partner involved is given a part of the revenue based on the contract that the service provider finalizes with the end customer.

In Subscription Order Management, you can create partner agreement orders that result in partner agreements. Partner agreements are processed in Convergent Invoicing and in SAP CC. Subscription partner contracts result in a partner agreement (provider contracts for a partner) in Contract Accounts Receivable and Payable (FI-CA). Subscription partner orders can only be created for products of a material type which is customized for a business partner.



Transactional Flow of Partner Settlements (Example)

A partner agreement order is created for a partner containing the partner product(s) for its business. When the partner agreement order is submitted, the partner agreement is created and replicated to the partner agreement and the SAP CC provider contract for partner

Furthermore, a customer contract is required for actual consumption

If usage is sent from SAP CC to Convergent Invoicing, this billable item is identified as relevant for partner settlement. In addition to the customer billable item, it also creates a partner chargable item. This partner chargeable item carries a technical ID that identifies the partner provider contract in SAP CC during charging and rating and sends a billable item for the partner back to Convergent Invoicing for further processing.

> **i Note**
>
> Products that are used in partner agreement orders must have their product types mapped to product purpose B Partner Agreement Product in Customizing under *Customer Management* > *Master Data* >

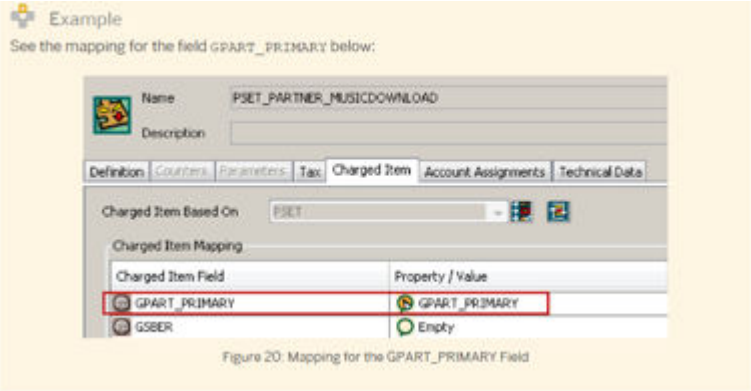
Settings for Subscription Master Data > *Subscription Product-Specific Data* > *Assign Product Purpose to Product Types* >.

In such cases, the settlement rule is a required entry in the partner agreement order. The settlement rule is defined in Convergent Invoicing under *Contract Accounts Receivable and Payable* > *Convergent Invoicing* > *Partner Settlement* > *Define Settlement Rules for Partner* > to define how partner billable items are processed during settlement.

To use partner settlement, the following configuration and technical setup steps are required

1. Define a billable item class for the customer billable items in Convergent Invoicing and activate the interface component Partner Settlement: Basic Data of Customer Item (CUST_ITEM). This automatically activates the prerequisite interface component Primary Items (PRIMARY_IT).
2. Define the billable item mapping in SAP CC, referencing this billable item class.
3. **Optional**
   Define a consumption item class for the partner consumption items in Convergent Invoicing, as well as a chargeable item class and the consumption item mapping in SAP CC, referencing this consumption item class.
   Based on the customer billable items, the dependent partner consumption items are created in Convergent Invoicing.
4. Define a consumption item class for these partner consumption items in Convergent Invoicing and activate the interface component **Partner Settlement: Basic Data of Partner Item (PARTNER_ITEM)**. This automatically activates the prerequisite interface component Secondary Item (**SECONDARY_IT**). Using this component, the fields for the link information to the customer billable item are included in the partner consumption item(s).
5. Define a chargeable item class and the consumption item mapping in SAP CC, referencing this consumption item class.
6. Define a billable item class for partner billable items in Convergent Invoicing and activate the interface component Partner Settlement: Basic Data of Partner Item (PARTNER_ITEM).
7. Define a billable item mapping in SAP CC, referencing this billable item class. For the partner billable item (partner charged item in SAP CC) to inherit the link information from the partner consumption item (partner chargeable item in SAP CC), you need to map the following fields from the chargeable item to the same fields of the charged item in the charge plan in SAP CC:
   - `GPART_PRIMARY`
   - `VTREF_PRIMARY`
   - `SUBAP_PRIMARY`
   - `SRCTAID_PRIMARY`
   - `SRCTATY_PRIMARY`
   - `RELTYPE_PRIMARY`

See the mapping for the field `GPART_PRIMARY` below:



Mapping of the GPART_PRIMARY Field

21.1 Partner Settlement with Convergent Invoicing

In a partner settlement scenario where you use charge plans (CC scenario), you add a reference to the partner agreement in the customer charge plan.

To identify the partner in a scenario with recurring charges implemented via a billing plan (CI scenario), you assign the dependent item type to the subscription product. The dependent item type is replicated to the billing plan item. For more information, please see Subscription Product-Specific Data.

To make the system settings for dependent item types, go to Customizing for *Contract Accounts Receivable and Payable* and choose *Convergent Invoicing* > *Enhanced Functions* > *Dependent Items* > *Define Dependent Item Types*. If you make the settings here, the dependent item type is available for assignment in the subscription product.

In addition, make the following Customizing settings for dependent items in Customizing for *Contract Accounts Receivable and Payable* under *Convergent Invoicing* > *Enhanced Functions* > *Dependent Items*:

- *Maintain Amount Calculation Key*
  The calculation key contains the formula used to calculate amounts for consumption items and billable items in secondary items.
- *Define Dependent Item Reason*
  The dependent item category, billable item/consumption item creation procedure, and the calculation key are assigned to the dependent item reason.
- *Assign Dependent Item Reason to Item Type*

> **i Note**
>
> The billable item class for which you want to create dependent items (customer/primary billable item class) contains the interface component DIT_PRIMARY.
>
> The billable item class of the dependent item (partner/ secondary billable item class) contains the interface component DIT_SECONDRY and DIT_PARTNER. If you are creating dependent items as consumption items, your consumption item class must contain the SECONDARY_IT interface component.

Also, make the following Customizing settings for dependent items in Customizing for *Contract Accounts Receivable and Payable* under ▶ *Convergent Invoicing* > *Enhanced Functions* > *Master Data Determination* ▶:

- *Maintain Number Range Interval for Master Data ID*
  The master data ID defines which business partner, contract account, or contract is to be used for the dependent billable item. Partner product and partner agreement are optional in this scenario.
- *Maintain Master Data ID*
  Based on the dependent item type and the dependent item reason, the system determines the master data ID.

22 DaaS – Equipment Integration with Subscription Items

Service providers offer their customers bundles of hardware devices (such as laptops, desktops, tablets, printers, or mobile phones), software, and services for a monthly subscription fee as part of a single contract. Solution quotations combine hardware and services. Equipment masters can be linked directly to the subscription items.

Equipment can be assigned to subscription items in the *Object List* assignment block, if the OBJ LIST indicator is set for the item category in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Define Settings for Subscription Items*.

If the equipment ID is assigned to the subscription item in the subscription order or solution quotation, it is copied to the subscription contract item on submit/accept. To send the equipment ID as a technical resource to SAP CC, use an assignment schema where the type of identification refers to category *7 – EQUIPMENT* (see Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Technical Resources* > *Define Types of Identification*).

In a business scenario, where the equipment ID is not known before a hardware device is delivered to the customer, the activation of the subscription contract depends on the equipment delivery status. SAP provides the following example implementation where the physical device is a sales sub-item of the contract main item. The sales item is processed for delivery where the equipment ID, linked to the serial number of the sales product, is assigned in the delivery document. On POST GOODS ISSUE of the delivery document the equipment status is updated to ECUS.

SAP delivers the ODI schema EQUI with the following steps which are updated based on certain events when the delivery document is created and processed.

Step Type	Description	Category	Category Description	Step Sequence	Prerequisite Step
PCER	Call FICA Message for Early Distribution	P0	Subscription Contract waits for activate	10	
EQUW	Wait for Contract Start date - non batch	P0	Subscription Contract waits for activate	20	10
EQUM	Equipment data maintained?	P1	Subscription Contract Activation	20	
EQUA	Are all Equipment active?	P1	Subscription Contract Activation	30	20
PCEA	Call FICA Message contract activation	P1	Subscription Contract Activation	40	30

When a subscription contract is created, that is, on submission/acceptance of the subscription order or solution quotation, the system creates a sales order for the sales sub-item and a subscription contract for the

main item. The contract distribution follows the fulfillment steps PCER and EQUW based on the start date of the contract. If distribution and activation of the contract have to be deferred based on certain conditions,for example, based on the equipment status, set the DEF.DISTR indicator in the subscription item type in Customizing under *Service* > *Transactions* > *Settings for Subscription Transactions* > *Define Settings for Subscription Items*. If owing to the integration of Revenue Accounting (FI-AR), you require an early distribution, then the PCER step must be executed to replicate the provider contract in inactive status.

On delivery of a sales order, when the serial number has been assigned and the equipment linked, when the delivery document is saved with the equipment ID assigned to it, the status of the fulfillment step EQUM must be executed. To achieve this, maintain the event type linkages for the receiver type SOM_EQUI_DELV in transaction SWE2 (see the following example).

Example

Object Category	Object Type	Event	Receiver Type
BO	LIKP	CREATED	SOM_EQUI_DELV
		CHANGED	SOM_EQUI_DELV

On goods issue, when the equipment status changes in ECUS, when the goods movement is posted in the delivery document, the status of the equipment must be set to ECUS and subsequently the fulfillment step EQUA must be satisfied. To achieve this, maintain the event type linkages for the receiver type SOM_EQUI_ACTV in transaction SWE2 (see the following example).

Example

Object Category	Object Type	Event	Receiver Type
BO	EQUI	CHANGED	SOM_EQUI_ACTV

If multiple equipment IDs are expected, then the EQUA step can only be completed successfully when all the equipment items assigned to the subscription items have ECUS status. The contract activation step PCEA is then executed and the provider contract activated.

For these event type linkages to work, the RFC destination and the user that is used in the RFC destination must be set up appropriately. Ensure that the user used by the RFC connection has the appropriate authorizations assigned.

Maintain the AIF Customizing for the interface in transaction /AIF/CUST under *Define Interfaces*. To support event type linkages, SAP delivers the AIF interfaces SB_EQ_ACTV and SB_EQ_DELV, which support the processing of errors. For example, if a subscription contract is locked when the serial number is assigned in the delivery document, an error is issued in transaction /AIF/ERR, which you can process.

Maintain the AIF Customizing for RFC settings in transaction /AIF/CUST under *Additional Interface Properties* > *Define RFC Settings*. If you are creating new event type linkages, make sure you configure the AIF interfaces to support the processing of errors.

23 Setting Up Communication with SAP CC

23.1 Setting Up Communication with SAP CC Using Web Services

To call an SAP CC Web service from SAP S/4HANA or SAP S/4HANA for Customer Management, you configure a logical port for each corresponding consumer proxy in SAP S/4HANA or SAP S/4HANA for Customer Management.

To guarantee availability and enable load balancing during rating, define one port per SAP CC dispatcher instance for all services used for rating (see column **Enabled for Use with Multiple Dispatchers**).

Sometimes, different versions of a web service are available, indicated by V1 / V2 /... in the name of the consumer proxy. In that case, you also have to use the WSDL for the corresponding service when creating the logical port. Which version of a web service is needed depends on the activated features.

In SAP S/4HANA, you can activate features using tables `TFKCOMP_FC` and `TFKCOMP_C`. In SAP S/4HANA, you can activate features in Customizing under *Service* > *Master Data* > *Settings for Subscription Master Data* > *Convergent Charging* > *Activate Integration Features*

The following consumer proxies are provided:

- Between SAP S/4HANA and SAP CC (consumer proxies on SAP S/4HANA side):

Internal Name of Consumer Proxy	Corresponding SAP CC Web Service	Enabled for Use with Multiple Dispatchers
`CO_FKKCC_CIT_CHARGE_SERVICE`	`chargeableItemCharging`	X
`CO_FKKCC_RATING_SERVICES`	`rating`	
`CO_FKKCC_RECHARGING_SERVICES`	`Recharging`	X
`CO_FKKCC_SUBSCRIBER_ACCOUNT`	`suacProvisioning`	
`CO_FKKCCV1_SUBSCRIBER_ACCOUNT`	`v1/suacProvisioning`	
`CO_ISX_ALLOWANCE_MANAGEMENT_V1`	`allowanceManagement`	
`CO_ISX_CC_CONTRACT_STATE_MANAG`	`contractStateManagement`	
`CO_ISX_CC_CTR_PROV_SERVICES`	`contractProvisioning`	

Internal Name of Consumer Proxy	Corresponding SAP CC Web Service	Enabled for Use with Multiple Dispatchers
CO_CRMS4_SOM_CC_V3_CATALOG_SER	V3/catalog	

- Between SAP S/4HANA and SAP CC (consumer proxies on SAP S/4HANA side):

Internal Name of Consumer Proxy	Corresponding SAP CC Web Service	Enabled for Use with Multiple Dispatchers
CO_CRM_ISX_CC_CHARGEABLE_ITEM	chargeableItemCharging	X
CO_CRM_ISX_CC_RATING_SERVICES	rating	
CO_CRM_ISX_CC_SUBSCRIBER_MAPPI	subscriberMappingTableManagement	
CO_CRMS4_SOM_CC_V2_SUBSCR_RT	v2/subscriberRangeTableManagement	
CO_CRM_ISX_CC_ACTIVATION_SRV	activation	

The following table gives templates for the URL of the main Web services published by SAP CC. To configure your logical ports, enter the URL as indicated in the table:

Corresponding SAP CC Web Service	URL Templates
Catalog Management (Version3)	http[s]://<UPDATER_HOST>:<UPDATER_WS_PORT>/v3/catalog?wsdl
Charging	http[s]://<DISPATCHER_HOST>:<DISPATCHER_WS_PORT>/chargeableItemCharging?wsdl
Business Process Management	http[s]://<UPDATER_HOST>:<UPDATER_WS_PORT>/rating?wsdl
Recharging	http[s]://<DISPATCHER_HOST>:<DISPATCHER_WS_PORT>/recharging?wsdl
Subscriber Account Management	http[s]://<UPDATER_HOST>:<UPDATER_WS_PORT>/suacProvisioning?wsdl
Charging Contract Management	http[s]://<UPDATER_HOST>:<UPDATER_WS_PORT>/contractProvisioning? wsdl

> **i Note**
>
> Enter https: or http: depending on whether SAP CC publishes the respective Web service using SSL. UPDATER indicates that you have to enter the respective UPDATER instance.
>
> DISPATCHER indicates that you have to enter the respective DISPATCHER instance.

> **i Note**
>
> If Secure Sockets Layer (SSL) has been enabled for the SAP CC Web services, the certificate of SAP CC must be trusted by SAP S/4HANA.

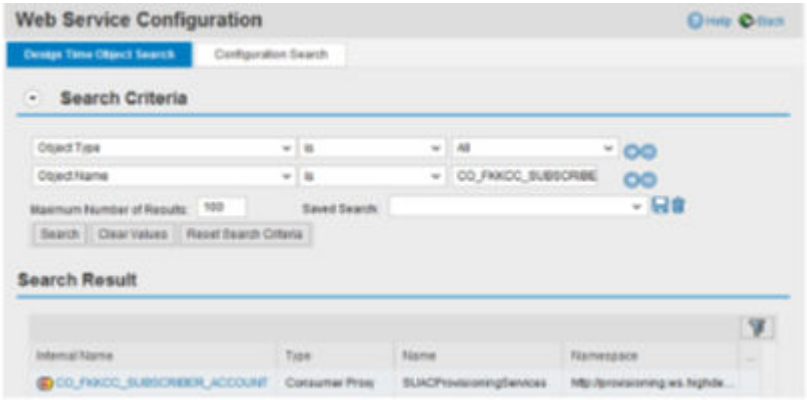
If SSL dual authentication has been enabled in SAP CC, you require a certificate for SAP S/4HANA.

You must install the SAP S/4HANA key pair in the SAP S/4HANA system and the SAP S/4HANA certificate must be trusted by SAP CC.

For more information, see the SAPNetWeaver Security Guide under Network and Communication Security Transport Layer Security.

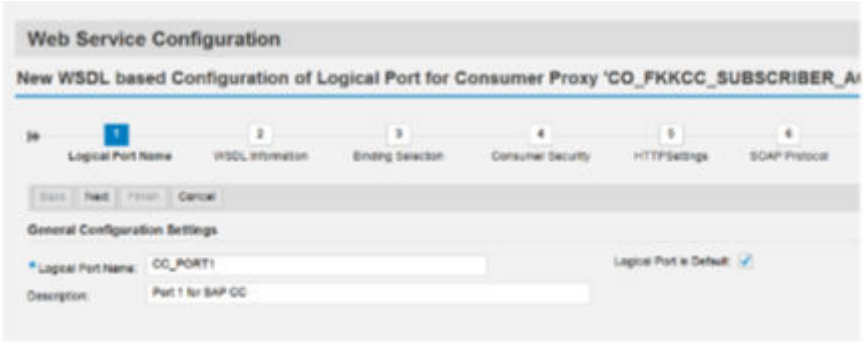
To configure logical ports, proceed as follows:

1. Call transaction SOAMANAGER in SAP S/4HANA system (depending on the consumer proxy; see list above).
2. Choose Web Service Configuration.
3. Search for the corresponding consumer proxy, for example, `CO_FKKCC_SUBSCRIBER_ACCOUNT`.



Consumer Proxy Search

4. Select the entry.
5. Go to the Configurations tab.
6. Choose *Create > WSDL Based Configuration* to create a new logical port.
7. In the following wizard, specify the corresponding logical port (see figure below):
   - Specify the logical port name.
   - Specify a description for the logical port.
   - Activate the *Logical Port is Default* checkbox.
   - Continue entering settings by choosing *Next*.



Specification of Logical Port

8. Specify the WSDL information (see figure below):
   - As WSDL Access Settings, select the value *Via HTTP Access*.
   - Specify the URL for the WSDL, which is published on the corresponding SAP CC Core Server system (see table specifying the URL templates above).
   - Continue entering settings by choosing *Next*.

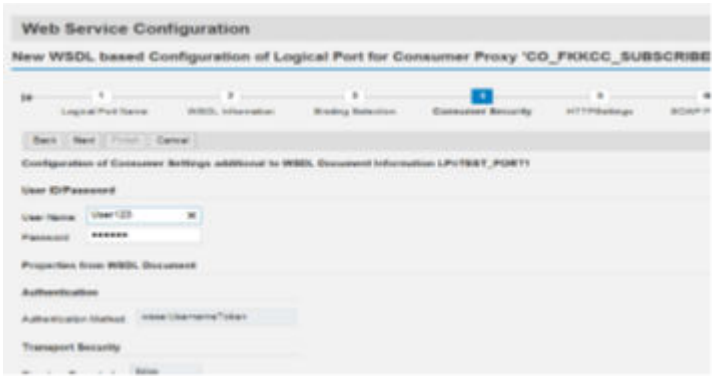
Specification of WSDL

9. Choose the port binding.

Specification of Port Binding

- If only one binding is displayed in the list (see figure above), continue by choosing *Next*. If more than one is listed, select the combination where the property name `Authentication Method is wsse:UsernameToken`.
- Continue entering the settings by choosing *Next*.

10. Specify a user name and a password for the communication with the SAP CC system (see figure below).



Specification of User Name and Password

11. Apply your settings by choosing *Next* and then *Finish*.

> **i Note**
>
> **Integration into Single Sign-On Environments in SAP CC 5.0**
>
> In addition to the default username token security profile, the SAP CC software also supports an Application to Application SSO mechanism to authenticate users consuming web services. This SSO mechanism only concerns the SOAP over HTTP communication channel and is based on the SAML token security profile that consists in transporting an SAML token into the header of SOAP messages.
>
> To configure logical ports with SAML token authentication, select the combination where the property name is `Authentication Method is wsse: SAML Assertion`.
>
> For more information about user authentication and integration into SSO environments, see the SAP NetWeaver Security Guide.

23.2 Setting Up Communication with SAP CC Using RFC

To set up RFC communication between the SAP S/4HANA and SAP CC systems, create a JCo user with the required authorizations in each SAP S/4HANA system.

To call an RFC function module in an SAP S/4HANA system from SAP CC, set up the JCo communication in the SAP CC system. For more information, see section “System Settings for JCo Communication” in the SAP CC Configuration Guide. Here you find information on how to configure the necessary JCo destinations and Service areas.

> **i** Note
>
> When you are connecting multiple SAP S/4HANA systems to one SAP CC system, in SAP CC, you define a reference SAP S/4HANA system from which SAP CC uses all Customizing settings (settings for consumption item classes, billable item classes, and currencies). Make sure that this SAP S/4HANA reference system contains all Customizing settings applied to all the SAP S/4HANA systems to which you are connecting the SAP CC system.

Example

You are using five SAP S/4HANA systems. Four systems are dedicated to billing and invoicing of your customers. One system is dedicated to billing and invoicing of the partners you are cooperating with (partner settlement). When you define the SAP S/4HANA reference system in SAP CC, this reference system has to contain the Customizing settings required for the billing and invoicing of your customers as well as your partners.

24 Maintaining SAP CC Mapping and Range Tables Remotely

While configuring products in SAP S/4HANA under *Service*, you assign mapping and range tables from SAP CC. These mapping and range tables are created in SAP CC and used during rating and charging.

You can reference the identifier of a table in a charge plan using a parameter. The system uses the value of this parameter as the default value. However, when you create a provider contract in SAP CC, you can use a parameter value (table identifier) that differs from the default value.

In the SAP S/4HANA system, you can overwrite charge plan parameters in the cross-catalog mapping in Subscription Product-Specific Data. For parameters of the mapping or range table type, you can create a different table and assign its identifier to a parameter value. When you use a subscription product in a provider contract or master agreement, you can overwrite the table parameter defined in SAP CC. During contract creation, the SAP S/4HANA system determines the appropriate parameter value (mapping or range table identifier) and sends it to the SAP CC system.

When you create content of mapping or range tables from the SAP S/4HANA system in SAP CC, you can also change the content from the SAP S/4HANA system. The content of the tables is not persisted in the SAP S/4HANA system. The SAP S/4HANA system only saves the table identifiers (table class ID and table ID) as default values or redefined parameter values.

SAP provides Web services for reading, creating, and maintaining SAP CC mapping and range tables. Configure the following consumer proxies of these Web services as described in the sectionSetting Up Communication with SAP CC Using Web Services [page 80]::

- `CO_CRMS4_SOM_CC_V3_CATALOG_SE`
- `CO_CRM_ISX_CC_SUBSCRIBER_MAPPI`
- `CO_CRMS4_SOM_CC_V2_SUBSCR_RT`

You maintain the mapping and range tables with the *Manage Mapping Tables* and *Manage Range Tables* apps delivered with the business role `SAP_BR_PROD_CONF_MODELER_SOM`. As an alternative you can use the role product configuration modeler `S4C_SOM_PROD - Product Modeler`.

25 Integration with Revenue Accounting

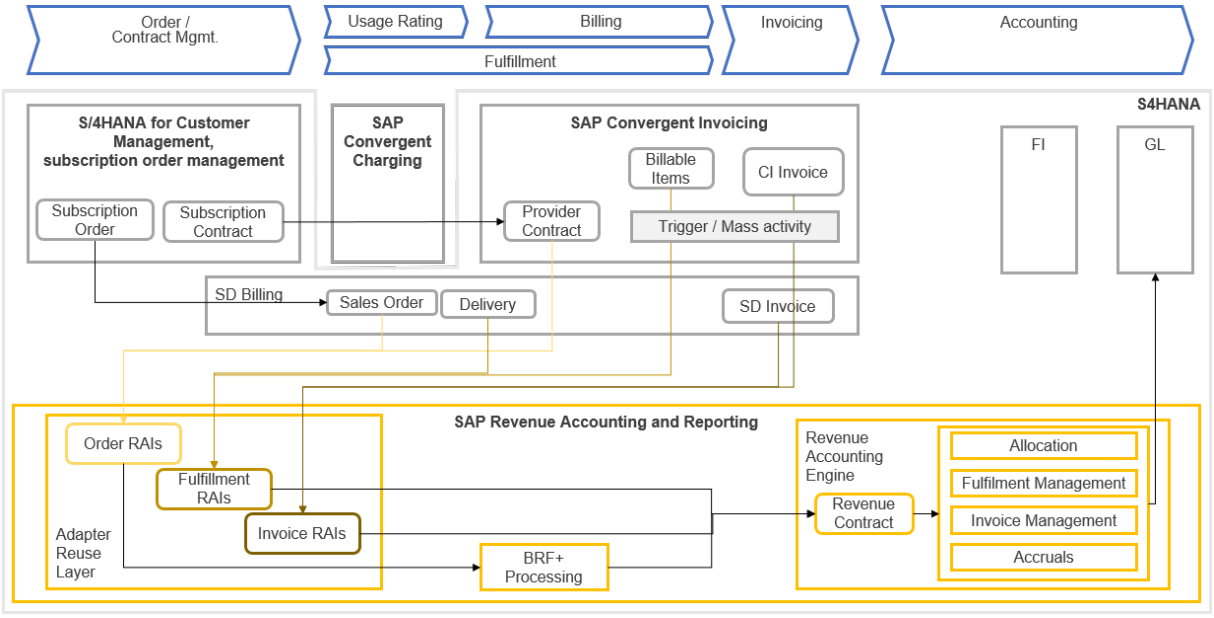
You can integrate the Subscription Order Management process with Revenue Accounting and Reporting. Revenue Accounting and Reporting provides functions to support you with adhering to revenue recognition regulations, especially the regulations effective in countries subject to both US GAAP and IFRS.

Revenue Accounting and Reporting automates the revenue recognition and accounting process and simplifies the tasks of revenue accountants in following the accounting guidelines. These tasks are described in the following steps:

- Identify the revenue contract (combine contracts)
- Identify the performance obligations in the contract
- Determine the transaction price
- Allocate the transaction price to the performance obligations of the contract
- Recognize the revenue as the performance obligations are satisfied

Within the end-to-end process, all data required is transferred to Revenue Accounting and Reporting in the SAP S/4HANA system.

To establish the update of Revenue Accounting and Reporting, activate the integration in Customizing for Contract Accounts Receivable and Payable under *Integration* > *Revenue Accounting*.



Integration with Revenue Accounting and Reporting

Revenue Accounting and Reporting receives the operative data (order items, invoice items and fulfillment items) from and stores the data in the form of revenue accounting items. The technical properties of the revenue accounting items are determined by revenue accounting item classes. You define these technical properties in the Customizing for Revenue Accounting under Inbound Processing revenue accounting items.

To transfer revenue accounting items to Revenue Accounting and Reporting, the revenue accounting item classes **CA01** (for order items), **CA02** (for fulfillment items), and **CA03** (for invoice items) must be available.

SAP defines the technical names of these classes. Using these technical names during revenue item class generation, the system automatically applies the settings required for each class.

For more information, see the integration documentation and the documentation of Revenue Accounting and Reporting.

26 Extensibility

Add Fields in Subscription Order, Subscription Contract, and Master Agreement

Use the *Custom Fields and Logic* app to add custom specific fields to one-order objects in SAP S/4HANA.

The following object share the same business context:

- Service order, service contract, and service order quotation
- Solution quotation
- Subscription order and subscription contract

This means, that the custom fields you add will be available in all objects that share the same business context. In an app a field will only be visible when you include it in the user interface.

To add fields to master agreements, use the *Agreement Header* and *Agreement Item* business contexts.

After adding the fields in the app, execute the post processing report `CRMS4_EXTENSION_POSTPROCESSING` for your business context in the backend system.

After executing the report check the enhanced data base tables (for example, in transaction `SE11`):

- `CRMS4D_SERV_H` (Subscription Order Header)
- `CRMS4D_SERV_I` (Subscription Item)
- `CRMS4D_MAGR_H` (Agreement Header)
- `CRMS4D_MAGR_I` (Agreement Item)

If you want to expose a new field on a Web Client UI, in the *UI component Workbench* (`BSP_WD_CMPWB`) you must define the UI enhancement set for the Web UI enhancement and assign it to the appropriate client in the backend system.

Define UI enhancement sets in the `BSPWDVC_CMP_EXT` view cluster in transaction `SM34`.

Assign enhancement set to client in the `BSPWDV_EHSET_ASG` view in transaction `SM30`.

Enable configuration mode in WebClient UI via personalization.

You have two options to display the field on the user interface:

- Visualizing the fields in the `CUSTOMER_H` or `CUSTOMER_I` assignment block.
- Add the fields to another view.

> **i Note**
>
> All custom fields added as described above to one order objects are only available in `Customer_H` or `Customer_I BOL` component or context nodes.

`CUSTOMER_H` and `CUSTOMER_I BOL` can be visualized in a separate assignment block which is already integrated in some of the UI components, such as the subscription order. However, they are not part of the default configuration. So you must adapt the UI configuration as follows:

1. Launch the Web Client UI, select an appropriate business role and navigate to the UI you want to change, such as the subscription order.
2. On the overview page press *Configure Page* to open the overview page configuration.
3. Move `BTCUSTOMER_H / I` from *Available Assignments Blocks* to *Displayed Assignment Blocks* and save your change.
4. Back on the Overview page press *Show Configurable Areas* to enter the view configuration for `BTCUSTOMER_H / I`.

Extend the Search with the *Custom Fields and Logic* App

You can extend the search for subscription orders, subscription contracts, and master agreements. As the subscription contract search is an item search only the fields for one item level is available in the search parameter and search result structure of the subscription contract search. Fields which have been enhanced on header or item level can also be enabled as search parameters and in the search result structure. To extend the search in the *Custom Fields and Logic* app, choose *UI and Reports* and enable the usage of the fields. Then publish the change.

To add the fields to Web Client UI, proceed as follows:

1. In the Web Client UI, select an appropriate business role and navigate to the User interface you would like to change, such as the subscription order search.
2. Press *Show Configurable Areas* to enter the view configuration for the search parameter view.
3. To add the field to the screen, in the search criteria view configuration move the enhanced field from the *Available Search Criteria* to the *Selected Search Criteria*. Then save your changes.
4. Repeat the procedure for the result list area.

SOAP API Extensibility using the *Custom Fields and Logic* App

Fields which you have added on header or item level you can also enable in the subscription order and subscription contract change SOAP API. To do so in the *Custom Fields and Logic* app, choose *SOAP API* and enable the usage of the fields. Then publish the change.

Business Add-Ins (BAdIs)

The following BAdIs are available:

BAdIs Related to SAP CC Integration

Description	BAdI Name / Enhancement Spot
BAdI: Data Mapping When Calling Web Services from SAP CC	`CRM_SE_SPOT_CC_CATALOG` (Enhancement Spot)
BAdI: Determination of Logical Port When Calling Web Services from SAP CC	`CRM_ISX_CC_WS_PORT` (Enhancement Spot)
BAdI: Create CC Table ID	`CRM_ISX_CC_TABLE_ID`
BAdI: Create CC Table ID	`CRM_ISX_CC_TABLE_ID`
BAdI: Display SAP CC Counters in Subscription Contracts	`CRM_ISX_PROV_CC_COUNTER`
BAdI: Determine Split for Subscriber Account in SAP CC	`CRMS4_SOM_BADI_CC_ACC_SPLIT`
BAdI: Allowance Creation	`CRM_ISX_ALLW_CREATE_WS`

BAdIs Related to Subscription Orders, Subscription Contracts, Contract Change, and the Integration with Revenue Accounting and Reporting

Description	BAdI Name
BAdI: Enhance Data in API for Subscription Orders and Contracts	`CRM_ISX_BTX_API`
Copy Subscription Contract to Subscription Change Order	`CRM_PROVIDER_COPY`
Product Change Process – Filter Product List	`CRMS4_BADI_PROD_CHNG_FILTER`
Recover Data When Changing Product	`CRM_RESCUE_DATA`
Replication to FICA Provider Contract	`CRM_ISX_ERP_CONTRACT`
BAdI: Change Type and ID for Revenue Accounting	`CRM_ISX_REV_ACC_TYPE_ID`

BAdIs Related to Technical Resources, Discounts, and One-Off Charges

Description	BAdI Name
Technical Resource Data	`CRM_TC_TECH_RES_BADI`
Technical Resource Value Help	`CRM_ISX_TR_VALUE_HELP_BADI`
Discounts	`CRM_ISX_BTX_DISCOUNTS`
One-Off Charges	`CRMS4_BADI_ONEOFF_INTEGRATION`

BAdIs Related to Master Agreements

Description	BAdI Name
Enhancements for Provider Master Agreement API	ES_CRM_PRVMA_API Including CRM_PRVMA_DATE_DETERMINE CRM_PRVMA_PARTNER_CHECK CRM_PRVMA_PRODUCT_LIST (obsolete)
BAdI: Determine Date to be Checked	CRM_PRVMA_DATE_DETERMINE
BAdI: Check Authorized Partners for Provider Master Agreement	CRM_PRVMA_PARTNER_CHECK
Data Exchange with CI for Master Agreement	CRMS4_MAGR_DATA_EXCH

BAdIs Related to DaaS - Equipment Integration

Description	BAdI Name
Does Equipment status allow for Subscr. Contract activation?	EQUI_STAT_ALLOWS_SUBR_CTR_ACTV
Determine the Billing Start Date for the Subscr. Contract	DETERM_SUBR_CTR_BILLING_START
Determine the Subcr. item on which Equi is to be maintained	DETERM_SUBR_ITEM_BY_SLS_ITEM
Determine Tech Res IDs based on Equipment Ids	DETERM_TR_IDS_BY_EQUI_IDS

26.1 Table Extensibility of Subscription Order and Subscription Contract

You can create custom tables for use in subscription orders and contracts via business role *AXT – Application Enhancement Tool* in the WebUI. To create custom tables, SAP provides the following enhancement objects:

- PROVIDER_ORDER (Subscription Order)
- PROVIDER_CONTRACT (Subscription Contract)

In the *Search Enhancements* screen, click on *New* and select the enhancement object to create the custom table. After you have added the table details and required fields in the respective assignment block, set the GENERATE indicator. Then go back to the main screen and click *Save and Generate*. The status of the enhanced table then changes to *Active*.

To expose the custom tables on a Web Client UI, in the UI component Workbench (transaction BSP_WD_CMPWB), you must move the new tables from the *Available Assignments* block to the *Display Assignments* block.

Implement SAP note 2963553 to be able to copy enhanced table data in subscription order data to subscription contracts.

27 APIs in Subscription Order Management

The APIs for Subscription Order Management are published on the API Hub. Please, refer to the API documentation at Application Programming Interface (API) for Subscription Orders and Contracts.

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