



Integration Guide for Integration of SAP S/4HANA Utilities with SAP Emarsys Customer Engagement

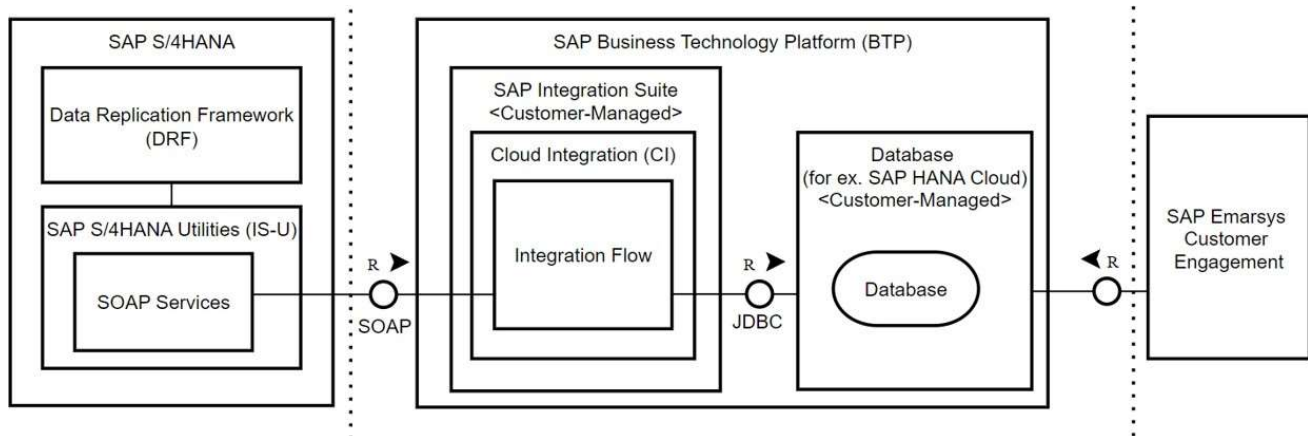
Contents

Introduction	3
Configuration.....	3
Data Protection and Privacy	3
Consent	3
Prerequisites	6
Prerequisites for the Customer-Managed Database.....	6
Prerequisites for SAP Cloud Integration.....	12
Prerequisites for SAP S/4HANA Utilities	15
Prerequisites for SAP Emarsys Customer Engagement	17
Configuration	17
Setting Up Premise Replication	18
Setting Up Contract Account Replication	23
Setting Up Contract Replication	28
Setting Up Sales Contract Replication	33
Setting Up Installation and Installation Facts Replication.....	37
Setting Up General Data Replication	44
Setting Up SAP Emarsys Customer Engagement	48
Finishing the Setup.....	49
Monitoring	49
Using the Replication Services	51
Replicating Changes (Delta Replication)	52
Replicate Manually	52
Extensibility	52
Modifying the Service Interface in the Enterprise Services Repository	53
Business Add-In Implementation	54
Extending an Integration Flow.....	55
Support	57

Introduction

The purpose of this document is to describe the general configuration steps that are required to set up integration between SAP S/4HANA Utilities and SAP Emarsys Customer Engagement.

SAP Cloud Integration is used as a middleware between SAP S/4HANA Utilities and SAP Emarsys Customer Engagement and to store the data in a customer-managed database (such as SAP HANA Cloud). The following diagram provides an overview of the main components involved in the integration:



Landscape Diagram of the SAP S/4HANA Utilities Integration with SAP Emarsys Customer Engagement

Configuration

To set up this integration, you configure the following systems:

- SAP S/4HANA Utilities
- SAP Cloud Integration
- Customer-managed database (such as SAP HANA Cloud)
- SAP Emarsys Customer Engagement

The integration package *SAP S/4HANA Utilities Integration with SAP Emarsys Customer Engagement* is required to replicate SAP S/4HANA Utilities data to SAP Emarsys Customer Engagement.

Data Protection and Privacy


Consent

It is the responsibility of the utilities company that uses the SAP S/4HANA Utilities integration with SAP Emarsys Customer Engagement solution to request and obtain consent of the data subjects (a natural person such as a customer, contact, or account) to use their personal data before replicating it from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement. It is assumed that the users of SAP Emarsys Customer Engagement have consent from their data subjects to transfer their data from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement for marketing purposes.

Before data is transmitted from SAP S/4HANA Utilities for replication, the SAP S/4HANA Utilities integration with SAP Emarsys Customer Engagement allows consent checks to be performed for the replication of the following objects:

- Contracts
- Sales contracts
- General data
- Installation data

By enabling consent checks for these objects, data replication is only performed on data that belongs to data subjects who have granted consent for marketing purposes. Consent checks for these objects can be enabled in Customizing.

For information about a consent check for business partner and contract account data, see SAP Note [3048468](#) .

Enabling Consent Checks

You can enable consent checks in SAP S/4HANA Utilities for the replication of data to SAP Emarsys Customer

Prerequisites

You configure the data replication framework for the objects or data for which you want to enable consent checks. For more information, see the following topics:




- [Configuring the Data Replication Framework for Contract Replication](#)
- [Configuring the Data Replication Framework for General Data Replication](#)
- [Configuring the Data Replication Framework for Installation and Installation Facts Replication](#)
- [Configuring the Data Replication Framework for Sales Contract Replication](#)

Context


The SAP S/4HANA Utilities integration with SAP Emarsys Customer Engagement only performs the consent checks against the consent records that are stored in Consent Administration of SAP S/4HANA, meaning that you must maintain these consent records in Consent Administration of SAP S/4HANA. If you use another consent administration application, you must ensure that consent records are imported regularly from that consent administration application into Consent Administration of SAP S/4HANA. For more information about Consent Administration in SAP S/4HANA, please refer to [Consent Administration](#) on SAP Help Portal.

Repeat this procedure for each object for which you want to enable consent checks.

Procedure

1. Use transaction DRFIMG.
2. Navigate to Customizing for [Define Replication Models](#) under  [Data Replication](#)  [Define Custom Settings for Data Replication](#) .

3. Select the replication model that corresponds to the object or utilities data for which you want to enable consent checks and then double-click the [Assign Outbound Implementation](#) node in the dialog structure.
4. Select the outbound implementation that corresponds to the object or utilities data for which you want to enable consent checks and then double-click the [Assign Outbound Parameter](#) node in the dialog structure.
5. Create a new entry.
6. Assign the following outbound parameters and then save your changes.

Outbound Parameter	Parameter Description
CNSNT_CHECK	The Outbound Parameter Value field for this outbound parameter supports the value X.
CNSNT_CNTRL_NAME	<p>The name of the data controller in charge of processing the data. The data controller is typically represented by line organizational attributes, such as the company code.</p> <p>The Outbound Parameter Value field for this outbound parameter is case-sensitive and has a maximum length of 30 characters.</p>
CNSNT_DS_ID_TYPE	<p>The type of ID used to identify the data subject.</p> <p>The Outbound Parameter Value field for this outbound parameter supports the following values:</p> <ul style="list-style-type: none"> ◦ 00001 Business Partner ID ◦ 00002 Business Partner UUID ◦ 00003 Customer ID ◦ 00004 Vendor ID ◦ 00005 Contact Person ID <p>The successful import of consent records with the ID types business partner ID, customer ID, vendor ID, and contact person ID requires leading zeros before the actual data subject ID. For more information, see SAP Note 2622341 .</p>
CNSNT_MODEL	<p>The consent model that will be used during the consent checks. The Outbound Parameter Value field for this outbound parameter supports the following consent models:</p> <ul style="list-style-type: none"> ◦ 01 The opt-in consent model. Data subjects must explicitly grant consent in order to allow the data controller to process their personal data. ◦ 02 The opt-out consent model. Data subjects must declare opt-out to disallow the data controller to process their personal data.

Outbound Parameter	Parameter Description
CNSNT_PURPOSE_NAME	The technical name of the purpose to which the consent record refers. The Outbound Parameter Value field for this outbound parameter is case-sensitive and has a maximum length of 30 characters.
CNSNT_APP_NAME	The optional technical name of the application that uses the personal data collected for the reason described in the purpose. If this parameter is defined, consent check will search for consent records matching the defined application name. The Outbound Parameter Value field for this outbound parameter is case-sensitive and has a maximum length of 30 characters.
PACK_SIZE_BULK	The package size for bulk messages.

□ **Note**

The outbound parameter values are automatically converted to uppercase. Consequently, the corresponding values in the consent record stored in Consent Administration of SAP S/4HANA should also be in uppercase.

Prerequisites

Prerequisites for the Customer-Managed Database

Complete the prerequisite procedures of the Customer-Managed Database that are required to configure this integration.

1. [Creating Database Tables for Storing the Replication Data](#)

Create database tables for storing the replicated data in your customer-managed database. We recommend using SAP HANA Cloud, since the integration flows have been optimized accordingly. Using other databases may require further changes to the integration flows.

2. [Obtaining the SQL Endpoint URL](#)

Obtain the SQL Endpoint URL from the customer-managed database.

Creating Database Tables for Storing the Replication Data

Create database tables for storing the replicated data in your customer-managed database. We recommend using SAP HANA Cloud, since the integration flows have been optimized accordingly. Using other databases may require further changes to the integration flows.

Context

1. Log on to your customer-managed database.
2. Create the database tables according to required fields mapped in the integration flow. Use or adapt the naming of database schema and tables as defined in the integration flow configuration.

□ Example for SAP HANA Cloud (Database Tables)

```
CREATE SCHEMA isu;
SET SCHEMA isu;

CREATE COLUMN TABLE isu.premise(
  UtilitiesPremiseID NVARCHAR(10),
  PremiseType NVARCHAR(8),
  NumberOfPersons INTEGER,
  DeletedIndicator BOOLEAN,
  OccupancyType NVARCHAR(10),
  HouseID NVARCHAR(10),
  StreetPostalCode NVARCHAR(10),
  CityName NVARCHAR(40),
  StreetName NVARCHAR(60),
  CountryCode NVARCHAR(3),
  RegionCode NVARCHAR(6),
  TimeZoneCode NVARCHAR(60),
  BuildingID NVARCHAR(10),
  FloorID NVARCHAR(10),
  RoomID NVARCHAR(10),
  PRIMARY KEY (UtilitiesPremiseID)
);
```

```
CREATE COLUMN TABLE isu.contract(  
UtilitiesContractID NVARCHAR(10),  
UtilitiesContractDescription NVARCHAR(40),  
UtilitiesDivisionCode NVARCHAR(2),  
UtilitiesMoveInDate DATE,  
UtilitiesMoveOutDate DATE,  
DeletionIndicator BOOLEAN,  
MeterType NVARCHAR(40),  
MeterTypeDescription NVARCHAR(40),  
BusinessPartnerID NVARCHAR(60),  
ContractAccountID NVARCHAR(12),  
UtilitiesPointOfDeliveryID NVARCHAR(50),  
UtilitiesPremiseID NVARCHAR(10),  
UtilsBillgBlockReason NVARCHAR(2),  
UtilitiesServiceProviderID NVARCHAR(10),  
UtilitiesInvoicingPartyID NVARCHAR(10),  
UtilitiesAccountDetnCode NVARCHAR(2),  
UtilsBdgtBillgIndicator BOOLEAN,  
PRIMARY KEY (UtilitiesContractID)  
);
```

```
CREATE COLUMN TABLE isu.contract_account(  
ContractAccountID NVARCHAR(12),  
BusinessPartnerID NVARCHAR(60),  
ContractAccountCategoryCode NVARCHAR(2),  
ContractAccountName NVARCHAR(40),  
CompanyID NVARCHAR(20),  
PaymentCondition NVARCHAR(4),  
CAAccountDeterminationCode NVARCHAR(2),  
UtilitiesAccountClass NVARCHAR(4),  
CollectiveBillsAlternativeContractAccountID NVARCHAR(12),  
CorrespondenceTypeGroupCode NVARCHAR(5),  
CorrespondenceSendControlCode NVARCHAR(4),  
IncomingPaymentMethodCode NVARCHAR(1),  
BudgetBillingPlanProcedure NVARCHAR(1),  
DeletedIndicator BOOLEAN,  
PRIMARY KEY (ContractAccountID)  
);
```



```
CREATE COLUMN TABLE isu.installation(  
UtilitiesInstallationID NVARCHAR(10),  
UtilitiesContractID NVARCHAR(10),  
DivisionID NVARCHAR(2),  
UtilitiesMoveInDate DATE,  
UtilitiesMoveOutDate DATE,  
RateCategory NVARCHAR(10),  
ValidFrom DATE,  
ValidTo DATE,  
RateCategoryOld NVARCHAR(10),  
MeterReadingUnit NVARCHAR(8),  
MeterReadingUnitDescription NVARCHAR(30),  
TemperatureArea NVARCHAR(8),  
VoltageLevel NVARCHAR(2),  
Industry NVARCHAR(10),  
InstallationType NVARCHAR(4),  
SupplyGuarantee NVARCHAR(4),  
PRIMARY KEY (UtilitiesInstallationID, UtilitiesContractID)  
);
```

```
CREATE COLUMN TABLE isu.installation_facts(  
UtilitiesInstallationID NVARCHAR(10),  
FactName NVARCHAR(30),  
StartDate DATE,  
EndDate DATE,  
Indicator NVARCHAR(1),  
Amount DOUBLE,  
Percentage DOUBLE,  
PRIMARY KEY (UtilitiesInstallationID, FactName, StartDate)  
);
```

```
CREATE COLUMN TABLE isu.balance(  
BusinessPartnerID NVARCHAR(60),  
ContractAccountID NVARCHAR(12),  
OpenBalance DOUBLE,  
OpenBalanceCurrencyCode NVARCHAR(3),  
PRIMARY KEY (BusinessPartnerID, ContractAccountID)  
);
```

```

CREATE COLUMN TABLE isu.consumption(
BusinessPartnerID NVARCHAR(60),
ContractAccountID NVARCHAR(12),
UtilitiesContractID NVARCHAR(10),
AverageAnnualConsumption DOUBLE,
AverageAnnualConsumptionUnitCode NVARCHAR(3),
AverageAnnualBillingAmount DOUBLE,
AverageAnnualBillingAmountCurrencyCode NVARCHAR(3),
TotalAnnualBillingAmount DOUBLE,
TotalAnnualBillingAmountCurrencyCode NVARCHAR(3),
TotalAnnualConsumption DOUBLE,
TotalAnnualConsumptionUnitCode NVARCHAR(3),
TotalConsumptionSummer DOUBLE,
TotalConsumptionSummerUnitCode NVARCHAR(3),
TotalConsumptionWinter DOUBLE,
TotalConsumptionWinterUnitCode NVARCHAR(3),
TotalSummerBillingAmount DOUBLE,
TotalSummerBillingAmountCurrencyCode NVARCHAR(3),
TotalWinterBillingAmount DOUBLE,
TotalWinterBillingAmountCurrencyCode NVARCHAR(3),
PRIMARY KEY (BusinessPartnerID, ContractAccountID, UtilitiesContractID)
);

```

```

CREATE COLUMN TABLE isu.sales_contract(
UtilsSalesContrLogicalItem NVARCHAR(16),
UtilitiesSalesItemStartDate TIMESTAMP,
BusinessPartnerID NVARCHAR(60),
ContractAccountID NVARCHAR(12),
UtilitiesDivisionCode NVARCHAR(2),
UtilitiesSalesItemStatus NVARCHAR(10),
IsCanceled BOOLEAN,
ContractStartDate TIMESTAMP,
ContractEndDate TIMESTAMP,
UtilitiesProductID NVARCHAR(40),
PreviousUtilitiesProductID NVARCHAR(40),
UtilitiesContractID NVARCHAR(10),
UtilitiesPointOfDeliveryPartyID NVARCHAR(50),
UtilitiesPremiseID NVARCHAR(10),
UtilitiesInstallationID NVARCHAR(10),
UtilitiesSalesItemEndDate TIMESTAMP,
PRIMARY KEY (UtilsSalesContrLogicalItem, UtilitiesSalesItemStartDate)
);

```

For the above example the database tables `isu.contract`, `isu.sales_contract`, `isu.contract_account`, `isu.balance` and `isu.consumption` contain the field `BusinessPartnerID` which can be used as a reference field for the contact in SAP Emarsys Customer Engagement. For the database tables `isu.premise`, `isu.installation` and `isu.installation_facts` the reference field can be enriched by defining a database view that joins the data from another database table that holds the reference field information (for example, `isu.contract` or `isu.sales_contract`).

□ Example for SAP HANA Cloud (View for `isu.premise`)

```
CREATE VIEW isu.contract_and_premise
AS SELECT p.UtilitiesPremiseID, p.PremiseType, p.StreetName, p.HouseID, p.StreetPostalCode, p.CityName,
c.BusinessPartnerID
FROM isu.premise AS p
INNER JOIN isu.contract AS c ON c.UtilitiesPremiseID = p.UtilitiesPremiseID
WHERE c.UtilitiesMoveInDate <= CURRENT_DATE AND c.UtilitiesMoveOutDate >= CURRENT_DATE
```

For the above example premise data is enriched with the business partner ID of the current contract which then can be used as a reference field for the contact in SAP Emarsys Customer Engagement.

□ Example for SAP HANA Cloud (View for `isu.installation` and `isu_installation_facts`)

```
CREATE VIEW isu.installation_and_facts
AS SELECT i.UtilitiesInstallationID, i.UtilitiesContractID, i.RateCategory, ifc.FactName, ifc.StartDate, ifc.EndDate,
ifc.Indicator, ifc.Amount, ifc.Percentage, c.BusinessPartnerID
FROM isu.installation AS i
INNER JOIN isu.installation_facts AS ifc ON i.UtilitiesInstallationID = ifc.UtilitiesInstallationID
INNER JOIN isu.contract AS c ON c.UtilitiesContractID = i.UtilitiesContractID
WHERE ( i.UtilitiesMoveInDate <= CURRENT_DATE AND i.UtilitiesMoveOutDate >= CURRENT_DATE )
AND ( i.ValidFrom <= CURRENT_DATE AND i.ValidTo >= CURRENT_DATE )
AND ( ifc.StartDate <= CURRENT_DATE AND ifc.EndDate >= CURRENT_DATE )
AND ( c.UtilitiesMoveInDate <= CURRENT_DATE AND c.UtilitiesMoveOutDate >= CURRENT_DATE )
```

For the above example installation and installation facts data is enriched with the business partner ID of the current contract which then can be used as a reference field for the contact in SAP Emarsys Customer Engagement.

Obtaining the SQL Endpoint URL

Procedure

1. Log on to your customer-managed database.
2. Obtain the SQL Endpoint URL.

□ Example

Example for SAP HANA Cloud: When using SAP HANA Cloud you can choose the “Copy SQL Endpoint” action from your SAP HANA Cloud Instance.

Prerequisites for SAP Cloud Integration

Complete the prerequisite procedures in SAP Cloud Integration that are required for configuring this integration.

1. [Creating a User with Basic Authentication to Access SAP Cloud Integration](#)

Create a user with basic authentication to access SAP Cloud Integration to enable communications from SAP S/4HANA Utilities to SAP Cloud Integration.

2. [Copying an Integration Package to Your Workspace](#)

Before you configure the integration flow scenarios for an integration package, you copy them to your workspace.

3. [Obtaining the Runtime URL from SAP Cloud Integration](#)

Obtain the runtime URL from SAP Cloud Integration to configure the Web services for this integration scenario.

4. [Creating JDBC Data Source in SAP Cloud Integration](#)

Create a JDBC Data Source in SAP Cloud Integration to establish a connection to the database.

Creating a User with Basic Authentication to Access SAP Cloud Integration

Create a user with basic authentication to access SAP-Cloud-Integration to enable communications from SAP S/4HANA Utilities to SAP-Cloud-Integration.

Context

If you already configured a user with basic authentication to access Cloud Integration, you can reuse it. One user with basic authentication to access SAP-Cloud-Integration is sufficient for setting up the SAP S/4HANA Utilities integration with SAP Emarsys Customer Management.

Caution

We recommend that you use the certificate-based authentication method. The basic authentication method, which consists of a username and a password, could compromise security in a productive environment.

Procedure

1. Log on to SAP Business Technology Platform cockpit.
2. Choose your environment.
3. In the **Security** dropdown menu, choose **Authorizations**.
4. Choose the **Groups** tab.
5. Maintain the SCN user.

Note

To use an SCN user for basic authentication, the SCN user (P-user) must be added to a user group with the following roles in the **Authorization Management** section:

- `AuthGroup.IntegrationDeveloper`
- `AuthGroup.BusinessExpert`

- `esbmessagestorage.read`
- `ESBMessaging.send`

Obtaining the Client Certificate from the Web UI for SAP Cloud Integration

From the Web UI for SAP-Cloud-Integration, obtain the client certificate used to authenticate communications from SAP S/4HANA to SAP-Cloud-Integration.

Context

For information about client certificates, see [Client Certificates](#) on SAP Help Portal.

Procedure

1. Log on to the Web UI of your SAP-Cloud-Integration tenant.
2. Choose the [Lock](#) icon in the address bar of your web browser.
3. In the popup window, choose [Certificate](#).
4. Choose [Copy to File](#).
5. Proceed through the steps of the wizard and then select [DER encoded binary X.509](#) when you're prompted to select the certificate format that you want to use.
6. Save the client certificate to your computer.

Obtaining the Client Certificate from Your Provisioning E-Mail for SAP Cloud Integration

From the provisioning e-mail for SAP-Cloud-Integration, obtain the client certificate used to authenticate communications from SAP S/4HANA to SAP-Cloud-Integration.

Procedure

1. Open your SAP-Cloud-Integration provisioning e-mail.
2. Choose the link under [Certificate Information](#).
3. Choose [X509 Certificate](#) with option [Binary CER](#).
4. Save the client certificate to your local machine.

Copying an Integration Package to Your Workspace

Before you configure the integration flow scenarios of an integration package, you copy them to your workspace.

Context

The integration package *SAP S/4HANA Utilities Integration with SAP Emarsys Customer Engagement* is required to replicate SAP S/4HANA Utilities data to SAP Emarsys Customer Engagement.

This is custom documentation. For more information, please visit the [SAP Help Portal](#)

Procedure

1. Log on to the Web UI of your SAP-Cloud-Integration tenant.
2. Choose [Discover](#).
3. Choose [All](#).
4. Search for the name of the integration package.
5. Copy the integration package from the catalog to your workspace.
 - a. Choose the integration package to open it.
 - b. Choose [Copy](#).
6. Choose [Design](#).
7. Ensure that the integration package is listed in the [Packages](#) table.

Obtaining the Runtime URL from SAP Cloud Integration

Obtain the runtime URL from SAP-Cloud-Integration to configure the Web services of this integration scenario.

Procedure

1. Log on to the Web UI of your SAP-Cloud-Integration tenant.
2. Choose [Monitor](#).
3. In the [Manage Integration Content](#) section, choose the [Started](#) tile.

The list of active integration flows is displayed.
4. In the [Integration Content](#) table, choose one of the following integration flows:
 - [Replicate Contract Account to SAP Emarsys Customer Engagement](#)
 - [Replicate Utilities Contract to SAP Emarsys Customer Engagement](#)
 - [Replicate Utilities General Data to SAP Emarsys Customer Engagement](#)
 - [Replicate Utilities Installation to SAP Emarsys Customer Engagement](#)
 - [Replicate Utilities Premise to SAP Emarsys Customer Engagement](#)
 - [Replicate Utilities General Data to SAP Emarsys Customer Engagement](#)
 - [Replicate Utilities Sales Contract to SAP Emarsys Customer Engagement](#)
5. Choose the [Endpoints](#) tab and then copy the runtime URL.

Creating JDBC Data Source in SAP Cloud Integration

Create a JDBC Data Source in SAP-Cloud-Integration to establish a connection to the database.

Procedure

1. Log on to the Web UI of your SAP-Cloud-Integration tenant.
2. Choose [Monitor](#).
3. In the [Manage Security](#) section, choose the database type (such as SAP HANA Cloud).
4. Choose [Add](#).
5. In the [Name](#) field, enter the name of the JDBC Data Source.
6. In the [Database Type](#) dropdown, choose the database type (such as SAP HANA Cloud).
7. In the [User](#) field, enter the username of the database.
8. In the [Password](#) field, enter the password for the username of the database.
9. In the [JDBC URL](#) field, enter the URL of the database.

Example

Example for SAP HANA Cloud: jdbc:sap//<HANA Cloud Instance ID>.hana.<Location>.hanacloud.ondemand.com:443

10. Choose [Deploy](#).

Prerequisites for SAP S/4HANA Utilities

Complete the prerequisite procedures for SAP S/4HANA Utilities that are required to configure this integration.

1. [Importing Certificates](#)

Import a trusted certificate into SAP S/4HANA Utilities to enable secure communications between SAP S/4HANA Utilities and SAP Cloud Integration.

2. [Validating the SAP Business Workflow Configuration](#)

Validate the SAP Business Workflow configuration to ensure that the status report does not contain status errors.

3. [Configuring the Event Queue Administration Tool](#)

Configure the Event Queue Administration tool to handle events correctly.

Importing Certificates

Import a trusted certificate into SAP S/4HANA Utilities to enable secure communications between SAP S/4HANA Utilities and SAP-Cloud-Integration.

Prerequisites

You obtained the certificate from SAP-Cloud-Integration. For information about certificate-based authentication, see the following resources:

- See *Client Certificates* under *User Administration and Authentication* in the SAP S/4HANA Security Guide on SAP Help Portal.

- Search for [Using X.509 Client Certificates on the AS ABAP on SAP Help Portal](#).

To import a trusted certificate into SAP S/4HANA Utilities, you require authorization for computing center administration `S_RZL_ADM` with 1 entered in the [Activity](#) field.

Procedure

1. Use transaction `STRUST`.
2. Choose [Change](#) and then double-click the [SSL client SSL Client \(Anonymous\)](#) directory.
3. Choose [Import certificate](#) and then select your certificate.
4. Choose [Continue](#).
5. In the popup window, choose [Allow](#).
6. Choose [Add to Certificate List](#).
7. Save your changes.
8. Right-click the [SSL client SSL Client \(Anonymous\)](#) directory and then choose [Distribute](#).
9. Use transaction `SMICM` and then choose [Refresh](#) to refresh the cache.

Validating the SAP Business Workflow Configuration

Check the SAP Business Workflow configuration to ensure that the status report does not contain status errors.

Context

The delta replication process leverages SAP Business Workflow. To use SAP Business Workflow, you require the `SAP_WFRT` system user with the `SAP_BC_BMT_WFM_SERV_USER` role template assigned to it. If you already configured the system user for use in other scenarios, you can reuse it. One system user with the role template is sufficient for the integration of SAP S/4HANA Utilities with SAP Emarsys Customer Management.

If the `SAP_WFRT` user doesn't exist, use transaction `SU01`, create the user, and then assign the `SAP_BC_BMT_WFM_SERV_USER` role template to it.

Procedure

1. Use transaction `SWU3`.
2. Under the [Edit Runtime Environment](#) node, ensure that there are no errors with the [Configure RFC Destination](#) entry.
3. Right-click [Configure RFC Destination](#) and then choose [Execute Activity](#).
4. Check that the status report does not contain status errors.

Configuring the Event Queue Administration Tool

Configure the Event Queue Administration tool to handle events correctly.

Context

The delta replication process of contracts and premises leverages Business Object Repository (BOR) events to monitor changes and request delta replication when a change is detected.

Procedure

1. Use transaction `SWEQADM`.
2. In the **Status of event queue** section, verify that the status indicator adjacent to **Event queue switched on** is a green square.
 - **Note**
If the status indicator isn't a green square, choose the **Activation** tab and then select the **Switch on event queue** checkbox.
3. Configure the remaining settings according to your requirements.

Prerequisites for SAP Emarsys Customer Engagement

Complete the prerequisite procedures for SAP Emarsys Customer Engagement that are required to configure this integration.

More information can be found in the [Emarsys Help](#) .

Configuration

Configuration is required to integrate SAP S/4HANA Utilities with SAP Emarsys Customer Engagement.

1. [Setting Up Premise Replication](#)

Set up SAP Cloud Integration and SAP S/4HANA Utilities to replicate premises from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

2. [Setting Up Contract Account Replication](#)

Set up SAP Cloud Integration and SAP S/4HANA Utilities to replicate contract accounts from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

3. [Setting Up Contract Replication](#)

Set up SAP Cloud Integration and SAP S/4HANA Utilities to replicate contracts from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

4. [Setting Up Sales Contract Replication](#)

Set up SAP Cloud Integration and SAP S/4HANA Utilities to replicate sales contracts from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

5. [Setting Up Installation and Installation Facts Replication](#)

Set up SAP Cloud Integration, and SAP S/4HANA Utilities to replicate installations and installation facts from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

6. [Setting Up General Data Replication](#)

Set up SAP Cloud Integration and SAP S/4HANA Utilities to replicate balance and consumption data in SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

7. [Setting Up SAP Emarsys Customer Engagement](#)

Set up SAP Emarsys Customer Engagement to retrieve the replicated data.

For setting up Business Partner Replication, see [this blog](#) .

Setting Up Premise Replication

Set up SAP Cloud Integration and SAP S/4HANA Utilities to replicate premises from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

1. [Setting Up SAP Cloud Integration for Premise Replication](#)

The *Replicate Premise to SAP Emarsys Customer Engagement* integration flow and the *Utilities Premise - Map WSDL to XSD* message mapping are included as part of the *SAP S/4HANA Utilities Integration with SAP Emarsys Customer Engagement* integration package.

2. [Setting Up SAP S/4HANA Utilities for Premise Replication](#)

Set up SAP S/4HANA Utilities to replicate premises to SAP Emarsys Customer Engagement.

Setting Up SAP Cloud Integration for Premise Replication

The *Replicate Premise to SAP Emarsys Customer Engagement* integration flow and the *Utilities Premise - Map WSDL to XSD* message mapping are included as part of the *SAP S/4HANA Utilities Integration with SAP Emarsys Customer Engagement* integration package.

To set up SAP-Cloud-Integration for premise replication, you deploy the message mapping and deploy configure the integration flow. Before proceeding, this integration package must be copied to your workspace, as described in [Copying an Integration Package to your Workspace](#).

Deploying the Message Mapping for Premise Replication

You deploy the *Utilities Premise - Map WSDL to XSD* message mapping.

Procedure

1. Log on to the Web UI of your SAP-Cloud-Integration tenant.
2. Choose [Design](#).
3. Choose the integration package that you copied to your workspace.
4. Choose the [Artifacts](#) tab.

An overview of the artifacts that are available in the selected integration package is displayed.

5. For the artifact that you want to configure, choose the corresponding [Actions](#) dropdown menu and then choose [Deploy](#).

A message is displayed informing you that the message mapping is triggered for deployment.

6. Wait until a subsequent message is displayed informing you that the message mapping is successfully deployed.

Deploying and Configuring the Integration Flow for Premise Replication

You deploy and configure the *Replicate Utilities Premise to SAP Emarsys Customer Engagement* integration flow.

Procedure

1. Log on to the Web UI of your SAP-Cloud-Integration tenant.
2. Choose [Design](#).
3. Choose the integration package that you copied to your workspace.
4. Choose the [Artifacts](#) tab.

An overview of the artifacts that are available in the selected integration package is displayed.

5. For the artifact that you want to configure, choose the corresponding [Actions](#) dropdown menu and then choose [Configure](#).
6. Choose the [Sender](#) tab and then configure as follows:

Note

The [Sender](#) tab corresponds to SAP S/4HANA Utilities, and the [Receiver](#) tab corresponds to SAP Emarsys Customer Engagement.

- a. In the [Sender](#) dropdown menu, select [SAPS4HANAUilities](#).
- b. In the [Adapter Type](#) dropdown menu, select [SOAP](#).
- c. In the [Address](#) field, enter the relative path that you will use to expose this integration flow. This path must be unique to your SAP-Cloud-Integration tenant.

Example /Utilities/PremiseReplication

- d. In the [Authorization](#) dropdown menu, select [User Role](#).

7. Choose the [Receiver](#) tab and then configure as follows:

- a. In the [Receiver](#) dropdown menu, select [SAPEmarsysCustomerEngagement](#).
- b. In the [Adapter Type](#) dropdown menu, select [JDBC](#).
- c. In the [JDBC Data Source Alias](#) field, enter the name of the JDBC Data Source Alias.
- d. In the [Connection Timeout \(in s\)](#) field, enter the connection timeout in seconds.
- e. In the [Query/Response Timeout \(in s\)](#) field, enter the query/response timeout in seconds.
- f. In the [Maximum Records](#) field, enter the maximum number of fetched records.

8. Choose the [More](#) tab.

- a. In the [customer_extension_enabled](#) field, enter [false](#) if no custom extensions is to be enabled.
- b. In the [customer_errorhandler_enabled](#) field, enter [false](#) if no custom extension error handler is to be enabled.
- c. In the [db_premise](#) field, enter the name of the database where the premise data is to be stored.

Example ISU.premise

- d. In the [transaction_handling](#) dropdown menu, select [Not Required](#).

9. Return to the [Artifacts](#) tab.

10. For the artifact that you want to deploy, choose the corresponding [Actions](#) dropdown menu and then choose [Deploy](#).

A message is displayed informing you that the integration flow is triggered for deployment.

11. Wait until a subsequent message is displayed informing you that the integration flow is successfully deployed.

Setting Up SAP S/4HANA Utilities for Premise Replication

Set up SAP S/4HANA Utilities to replicate premises to SAP Emarsys Customer Engagement.

1. [Creating the Outbound Service for Premises in the SOA Manager Tool](#)

You create the premise outbound service in the SOA Manager tool for the data exchange from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

2. [Configuring the Data Replication Framework for Premise Replication](#)

You configure the data replication framework to replicate premises.

3. [Configuring Delta Replication of Premises](#)

The replication of premises pulls data from two objects: the connection object and the premise. You create event linkages for both of these objects. The delta replication of premises uses a function module to monitor for events that are triggered by the creation of or an update to a premise as well as an update to a connection object and then sends requests for the data to be replicated.

Creating the Outbound Service for Premises in the SOA Manager Tool

You create the premise outbound service in the SOA Manager tool for the data exchange from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

Procedure

1. Use transaction `SOAMANAGER`.
2. In the **Service Administration** tab, choose **Web Service Configuration**.
3. Search for the `CO_ISU_MKT_UTILITIES_PREMISE_B` object name.
4. Choose the internal name of the object.
5. Choose **Create** and then select **Manual Configuration**.
6. Configure the logical port name as follows and then choose **Next**.
 - a. In the **Logical Port Name** field, enter `LP_` followed by the logical port name of the system to which you're connecting.
 - b. Select the **Logical Port is Default** checkbox.
 - c. Enter a description such as `Utilities Premise Replication`.
7. Configure the consumer security with one of the following forms of authentication and then choose **Next**:

- o Basic Authentication

Enter the user ID and password that you use to connect to your SAP-Cloud-Integration tenant.

- **Note**

- By default, the **User ID / Password** radio button is selected.

- o Certificate-Based Authentication

- a. Select the **X.509 SSL Client Certificate** radio button.
- b. Choose the value help of the **SSL Client PSE of transaction STRUST** field.
- c. Choose the PSE in which the client certificate that was issued by Certification Authority (CA) and

supported by SAP-Cloud-Integration is stored.

8. Configure the HTTP settings as follows and then choose [Next](#).
 - a. In the **URL** field, enter the runtime URL from SAP-Cloud-Integration and add the relative path that was chosen when configuring the integration flow for premise replication.

Example
`https://<SAP Cloud Integration Tenant ID>.hana.ondemand.com:443/Utilities/PremiseReplication`

For information about obtaining the runtime URL, see [Obtaining the Runtime URL from SAP Cloud Integration](#).

- b. For the proxy host, enter a name such as `Proxy`.
 - c. For the proxy host, enter a port number such as `8080`.
9. Configure the SOAP protocol as follows and then choose [Finish](#).
 - a. In the **RM Protocol** dropdown menu, select [SAP RM](#).
 - b. In the **Message ID Protocol**, select [SAP Message ID](#).
 - c. In the **Data transfer scope** dropdown menu, select [Basic Data Transfer](#).

Configuring the Data Replication Framework for Premise Replication

You configure the data replication framework to replicate premises.

Procedure

1. Use transaction `DRFIMG`.
2. Navigate to Customizing for [Define Technical Settings for Business Systems](#) under [Data Replication](#) > [Define Custom Settings for Data Replication](#) > [Define Technical Settings](#).
3. If no business system for SAP Emarsys Customer Engagement exists yet, add a new entry for the business system for SAP Emarsys Customer Engagement and then save your changes.
4. Select the business system and then double-click the [Define Bus. Systems, BOs](#) node in the dialog structure.
5. Configure a new entry as follows and then save your changes.
 - a. In the **BO Type** field, enter `ISU_PREMIS`.
 - b. Select the **System Filter** checkbox.
6. Select the business object type and then double-click the [Define Bus. Systems, BOs, Communication Channel](#) node in the dialog structure.
7. In the **Communication Channel** dropdown menu, select [Replication via Services](#) and then save your changes.
8. Navigate to Customizing for [Define Replication Models](#) under [Data Replication](#) > [Define Custom Settings for Data Replication](#).
9. Configure a new entry as follows and then save your changes.
 - a. In the **Replication Model** field, enter a name.
 - b. Enter a description.
 - c. In the **Log Days** field, enter a value such as `50`.
10. Select the replication model and then double-click the [Assign Outbound Implementation](#) node in the dialog structure.
11. Configure a new entry as follows and then save your changes.

- a. In the **Outbound Implementation** field, enter `ISU_PREMIS`.
 - b. In the **Sequence** field, enter `1`.
12. Select the outbound implementation and then double-click the **Assign Target Systems for Repl. Model / Outb.Impl** node in the dialog structure.
13. Add a new entry using the business system that you created in step 3 and then save your changes.
14. Select the business system and then double-click the **Assign Outbound Parameter** node in the dialog structure.
15. Configure a new entry as follows and then save your changes.
 - a. In the **Outbound Parameter** field, enter `PACK_SIZE_BULK`.
 - b. In the **Outbound Parameter Value** field, enter a value such as `20`.
16. Double-click the **Define Replication Model** node in the dialog structure.
17. Select the replication model and then choose **Activate**.

Configuring Delta Replication for Premises

The replication of premises pulls data from two objects: the connection object and the premise. You create event linkages for both of these objects. The delta replication of premises uses a function module to monitor for events that are triggered by the creation of or an update to a premise as well as an update to a connection object and then sends requests for the data to be replicated.

Context

Note

Delta replication cannot be triggered by creating a new connection object because the connection object may not be linked to any premises.

Procedure

1. Use transaction `SWE2`.
2. Configure a new event linkage for changes that are made to connection objects as follows and then save your changes.
 - a. In the **Object Type** field, enter `CONNOBJ`.
 - b. In the **Event** field, enter `CHANGED`.
 - c. In the **Receiver Function Module** field, enter `ISU_PREMISE_DRF_DELTA_OUT`.
 - d. Select the **Linkage Activated** checkbox.
3. Configure a new event linkage for the creation of new premises as follows and then save your changes.
 - a. In the **Object Type** field, enter `PREMISES`.
 - b. In the **Event** field, enter `CREATED`.
 - c. In the **Receiver Function Module** field, enter `ISU_PREMISE_DRF_DELTA_OUT`.
 - d. Select the **Linkage Activated** checkbox.
4. Configure a new event linkage for changes made to premises as follows and then save your changes.
 - a. In the **Object Type** field, enter `PREMISES`.
 - b. In the **Event** field, enter `CHANGED`.
 - c. In the **Receiver Function Module** field, enter `ISU_PREMISE_DRF_DELTA_OUT`.

- d. Select the **Linkage Activated** checkbox.
5. If the data of the owner of a premise is not stored within the premise, configure a new event linkage for the creation of new ownership allocations as follows and then save your changes.
 - a. In the **Object Type** field, enter ISUPROP.
 - b. In the **Event** field, enter CREATED.
 - c. In the **Receiver Function Module** field, enter ISU_PREMISE_DRF_DELTA_OUT.
 - d. Select the **Linkage Activated** checkbox.
6. If the data of the owner of a premise is not stored within the premise, configure a new event linkage for changes made to ownership allocations as follows and then save your changes.
 - a. In the **Object Type** field, enter ISUPROP.
 - b. In the **Event** field, enter CHANGED.
 - c. In the **Receiver Function Module** field, enter ISU_PREMISE_DRF_DELTA_OUT.
 - d. Select the **Linkage Activated** checkbox.

Setting Up Contract Account Replication

Set up SAP-Cloud-Integration and SAP S/4HANA Utilities to replicate contract accounts from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

1. [Setting Up SAP Cloud Integration for Contract Account Replication](#)

The *Replicate Contract Account to SAP Emarsys Customer Engagement* integration flow and the *Contract Account - Map WSDL to XSD* message mapping are included as part of the *SAP S/4HANA Utilities Integration with SAP Emarsys Customer Engagement* integration package.

2. [Setting Up SAP S/4HANA Utilities for Contract Account Replication](#)

Set up SAP S/4HANA Utilities to replicate contract accounts to SAP Emarsys Customer Engagement.

Setting Up SAP Cloud Integration for Contract Account Replication

The *Replicate Contract Account SAP Emarsys Customer Engagement* integration flow and the *Contract Account - Map WSDL to XSD* message mapping are included as part of the *SAP S/4HANA Utilities Integration with SAP Emarsys Customer Engagement* integration package.

To set up SAP-Cloud-Integration for contract account replication, you deploy and configure the integration flow. Before proceeding, you must copy this package to your workspace, as described in [Copying an Integration Package to Your Workspace](#).

Deploying and Configuring the Integration Flow for Contract Account Replication

You deploy and configure the *Replicate Contract Account to SAP Emarsys Customer Engagement* integration flow.

Procedure

1. Log on to the Web UI of your SAP-Cloud-Integration tenant.
2. Choose [Design](#).
3. Choose the integration package that you copied to your workspace.
4. Choose the [Artifacts](#) tab.

An overview of the artifacts that are available in the selected integration package is displayed.

5. For the artifact that you want to configure, choose the corresponding [Actions](#) dropdown menu and then choose [Configure](#).
6. Choose the [Sender](#) tab and then configure as follows:

Note

The [Sender](#) tab corresponds to SAP S/4HANA Utilities, and the [Receiver](#) tab corresponds to SAP Emarsys Customer Engagement.

- a. In the [Sender](#) dropdown menu, select [SAPS/4HANAUtilities](#).
- b. In the [Adapter Type](#) dropdown menu, select [SOAP](#).
- c. In the [Address](#) field, enter the relative path that you will use to expose this integration flow. This path must be unique to your SAP-Cloud-Integration tenant.

Example /Utilities/ContractAccountReplication

- d. In the [Authorization](#) dropdown menu, select [User Role](#) or [Client Certificate](#).

7. Choose the [Receiver](#) tab and then configure as follows:
 - a. In the [Receiver](#) dropdown menu, select [SAPEmarsysCustomerEngagement](#).
 - b. In the [Adapter Type](#) dropdown menu, select [JDBC](#).
 - c. In the [JDBC Data Source Alias](#) field, enter the name of the JDBC Data Source Alias.
 - d. In the [Connection Timeout \(in s\)](#) field, enter the connection timeout in seconds.
 - e. In the [Query/Response Timeout \(in s\)](#) field, enter the query/response timeout in seconds.
 - f. In the [Maximum Records](#) field, enter the maximum number of fetched records.
8. Choose the [More](#) tab.
 - a. In the [customer_extension_enabled](#) field, enter [false](#) if no custom extensions are to be enabled.
 - b. In the [customer_errorhandler_enabled](#) field, enter [false](#) if no custom extension error handler is to be enabled.
 - c. In the [db_premise](#) field, enter the name of the database where the contract account data is to be stored.

Example ISU.contract_account

- d. In the [transaction_handling](#) dropdown menu, select [Not Required](#).

9. Return to the [Artifacts](#) tab.
10. For the artifact that you want to deploy, choose the corresponding [Actions](#) dropdown menu and then choose [Deploy](#).

A message is displayed informing you that the integration flow is triggered for deployment.
11. Wait until a subsequent message is displayed informing you that the integration flow is successfully deployed.

Deploying the Message Mapping for Contract Account Replication

You deploy the *Contract Account - Map WSDL to XSD* message mapping.

Procedure

1. Log on to the Web UI of your SAP-Cloud-Integration tenant.
2. Choose [Design](#).
3. Choose the [Integration Package](#) that you copied to your workspace.
4. Choose the [Artifacts](#) tab.

An overview of the artifacts that are available in the selected integration package is displayed.
5. For the artifact that you want to deploy, choose [Actions](#) and then choose [Deploy](#).

A message is displayed informing you that the message mapping is triggered for deployment.
6. Wait until a subsequent message is displayed informing you that the message mapping is successfully deployed.

Setting Up SAP S/4HANA Utilities for Contract Account Replication

Set up SAP S/4HANA Utilities to replicate contract accounts to SAP Emarsys Customer Engagement.

1. [Creating the Outbound Service for Contract Accounts in the SOA Manager Tool](#)

You create the contract account outbound service in the SOA Manager tool for the data exchange from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

2. [Configuring the Data Replication Framework for Contract Account Replication](#)

You configure the data replication framework for contract account replication.

3. [Configuring the Delta Replication of Contract Accounts](#)

The delta replication for contract accounts uses a function module to monitor for events that are triggered by the creation of or an update to a contract account and then sends requests for the data to be replicated.

Creating the Outbound Service for Contract Accounts in the SOA Manager Tool

You create the contract account outbound service in the SOA Manager tool for the data exchange from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

Procedure

1. Use transaction `SOAMANAGER`.
2. Under the [Service Administration](#) tab, choose [Web Service Configuration](#).
3. Search for the object name `CO_FKK_MDG_CONTRACT_ACCOUNT_BU`.
4. Choose the internal name of the object.

5. Choose [Create](#) and then select [Manual Configuration](#).
6. Configure the logical port name as follows and then choose [Next](#).
 - a. In the [Logical Port Name](#) field, enter the logical port name of the system to which you're connecting.
 - b. Select the [Logical Port is Default](#) checkbox.
 - c. Enter a description such as `Utilities Contract Account Replication`.

7. Configure the consumer security with one of the following forms of authentication and then choose [Next](#):

- Basic Authentication

Enter the user ID and password that you use to connect to your SAP-Cloud-Integration tenant.

Note

By default, the [User ID / Password](#) radio button is selected.

- Certificate-Based Authentication

- a. Select the [X.509 SSL Client Certificate](#) radio button.
- b. Choose the value help of the [SSL Client PSE of transaction STRUST](#) field.
- c. Choose the PSE in which the client certificate that was issued by Certification Authority (CA) and supported by SAP-Cloud-Integration is stored.

8. Configure the HTTP settings as follows and then choose [Next](#).

- a. In the [URL](#) field, enter the runtime URL from SAP-Cloud-Integration and add the relative path that was chosen when configuring the integration flow for contract account replication.

Example

`https://<SAP Cloud Integration Tenant ID>.hana.ondemand.com:443/Utilities/ContractReplication`

For information about obtaining the runtime URL, see [Obtaining the Runtime URL from SAP Cloud Integration](#).

- b. Enter a name such as `Proxy` for the proxy host.
- c. Enter a port number such as `8080` for the proxy host.

9. Configure the SOAP protocol as follows and then choose [Finish](#).

- a. In the [RM Protocol](#) dropdown menu, select [SAP RM](#).
- b. In the [Message ID Protocol](#), select [SAP Message ID](#).
- c. In the [Data transfer scope](#) dropdown menu, select [Basic Data Transfer](#).

Configuring the Data Replication Framework for Contract Account Replication

You configure the data replication framework for contract account replication.

Procedure

1. Use transaction `DRFIMG`.
2. Navigate to Customizing for [Define Technical Settings for Business Systems](#) under [Data Replication](#) > [Define Custom Settings for Data Replication](#) > [Define Technical Settings](#).
3. If no business system for SAP Emarsys Customer Engagement exists yet, add a new entry for the business system for SAP Emarsys Customer Engagement and then save your changes.

4. Select the business system and then double-click the **Define Bus. Systems, BOs** node in the dialog structure.
5. Configure a new entry as follows and then save your changes.
 - a. In the **BO Type** field, enter `DRF_0036`.
 - b. Select the **System Filter** checkbox.
6. Select the business object type then double-click the **Define Bus. Systems, BOs, Communication Channel** node in the dialog structure.
7. In the **Communication Channel** dropdown menu, select **Replication via Services** and then save your changes.
8. Navigate to Customizing for **Define Replication Models** under **Data Replication > Define Custom Settings for Data Replication**.
9. Configure a new entry as follows and then save your changes.
 - a. In the **Replication Model** field, enter a name.
 - b. Enter a description.
 - c. In the **Log Days** field, enter a value such as 50.
10. Select the replication model and then double-click the **Assign Outbound Implementation** node in the dialog structure.
11. Configure a new entry as follows and then save your changes.
 - a. In the **Outbound Implementation** field, enter `DRF_0036_3`.
 - b. In the **Sequence** field, enter 1.
12. Select the outbound implementation and then double-click the **Assign Target Systems for Repl. Model / Outb.Impl** node in the dialog structure.
13. Add a new entry using the business system that you created in step 3 and then save your changes.
14. Select the business system and then double-click the **Assign Outbound Parameter** node in the dialog structure.
15. Configure a new entry as follows and then save your changes.
 - a. In the **Outbound Parameter** field, enter `PACK_SIZE_BULK`.
 - b. In the **Outbound Parameter Value** field, enter a value such as 20.
16. Double-click the **Define Replication Model** node in the dialog structure.
17. Select the replication model and then choose **Activate**.

Configuring Delta Replication for Contract Accounts

The delta replication of contract accounts uses a function module to monitor for events that are triggered by the creation or are an update to a contract account and then sends requests for the data to be replicated.

Procedure

1. Use transaction `FQEVENTS`.
2. In the **Event** column, double-click 1031.
3. Choose the **Function Modules** tab.
4. In the **Installation-Specific Function Modules or Cloud BAdI** section, choose **Change Customizing**.
5. In the **Active Module** field, add a new entry for the `FKK_MDG_OUTBOUND` function module and then save your changes.

Setting Up Contract Replication

Set up SAP-Cloud-Integration and SAP S/4HANA Utilities to replicate contracts from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

1. [Setting Up SAP Cloud Integration for Contract Replication](#)

The Replicate Utilities Contract to *SAP Emarsys Customer Engagement* integration flow and the *Utilities Contract - Map WSDL to XSD* message mapping are included as part of the *SAP S/4HANA Utilities Integration with SAP Emarsys Customer Engagement* integration package.

2. [Setting Up SAP S/4HANA Utilities for Contract Replication](#)

Set up SAP S/4HANA Utilities to replicate contracts to SAP Emarsys Customer Engagement.

Setting Up SAP Cloud Integration for Contract Replication

The *Replicate Utilities Contract to SAP Emarsys Customer Engagement* integration flow and the *Utilities Contract - Map WSDL to XSD* message mapping are included as part of the *SAP S/4HANA Utilities Integration with SAP Emarsys Customer Engagement* integration package.

To set up SAP Cloud Integration for contract replication, you deploy the message mapping and deploy and configure the integration flow. Before proceeding, you must copy this package to your workspace, as described in [Copying an Integration Package to Your Workspace](#). Setting Up SAP S/4HANA Utilities for Contract Replication

Deploying the Message Mapping for Contract Replication

You deploy the *Utilities Contract - Map WSDL to XSD* message mapping.

Procedure

1. Log on to the Web UI of your SAP-Cloud-Integration tenant.
2. Choose [Design](#).
3. Choose the integration package that you copied to your workspace.
4. Choose the [Artifacts](#) tab.

An overview of the artifacts that are available in the selected integration package is displayed.

5. For the artifact that you want to deploy, choose [Actions](#) and then choose [Deploy](#).

A message is displayed informing you that the message mapping is triggered for deployment.

6. Wait until a subsequent message is displayed informing you that the message mapping is successfully deployed.

Deploying and Configuring the Integration Flow for Contract Replication

You deploy and configure the *Replicate Utilities Contract to SAP Emarsys Customer Engagement* integration flow.

Procedure

1. Log on to the Web UI of your SAP-Cloud-Integration tenant.
2. Choose **Design**.
3. Choose the integration package that you copied to your workspace.
4. Choose the **Artifacts** tab.

An overview of the artifacts that are available in the selected integration package is displayed.

5. For the artifact that you want to configure, choose the corresponding **Actions** dropdown menu and then choose **Configure**.
6. Choose the **Sender** tab and then configure as follows:

Note

The **Sender** tab corresponds to SAP S/4HANA Utilities, and the **Receiver** tab corresponds to SAP Emarsys Customer Engagement.

- a. In the **Sender** dropdown menu, select **SAPS4HANAUilities**.
- b. In the **Adapter Type** dropdown menu, select **SOAP**.
- c. In the **Address** field, enter the relative path that you will use to expose this integration flow. This path must be unique to your SAP-Cloud-Integration tenant.

Example /Utilities/ContractReplication

- d. In the **Authorization** dropdown menu, select **User Role**.

7. Choose the **Receiver** tab and then configure as follows:

- a. In the **Receiver** dropdown menu, select **SAPEmarsysCustomerEngagement** and configure as follows:
- b. In the **Adapter Type** dropdown menu, select **JDBC**.
- c. In the **JDBC Data Source Alias** field, enter the name of the JDBC Data Source Alias.
- d. In the **Connection Timeout (in s)** field, enter the connection timeout in seconds.
- e. In the **Query/Response Timeout (in s)** field, enter the query/response timeout in seconds.
- f. In the **Maximum Records** field, enter the maximum number of fetched records.

8. Choose the **More** tab and then configure as follows:

- a. In the **customer_extension_enabled** field, enter **false** if no custom extensions are to be enabled.
- b. In the **customer_errorhandler_enabled** field, enter **false** if no custom extension error handler is to be enabled.
- c. In the **db_contract** field, enter the name of the database where the premise data is to be stored.

Example ISU.contract

- d. In the **transaction_handling** dropdown menu, select **Not Required**.

9. Return to the **Artifacts** tab.
10. For the artifact that you want to deploy, choose the corresponding **Actions** dropdown menu and then choose **Deploy**.

A message is displayed informing you that the integration flow is triggered for deployment.

11. Wait until a subsequent message is displayed informing you that the integration flow is successfully deployed.

Setting Up SAP S/4HANA Utilities for Contract Replication

Set up SAP S/4HANA Utilities to replicate contracts to SAP Emarsys Customer Engagement.

1. [Creating the Outbound Service for Contracts in the SOA Manager Tool](#)

You create the contract outbound service in the SOA Manager tool for the data exchange from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

2. [Configuring the Data Replication Framework for Contract Replication](#)

You configure the data replication framework for contract replication.

3. [Configuring Delta Replication of Contracts](#)

Configure the delta replication for contracts so that when a change is made to an existing contract or a customer moves into a premise, an event is raised on the BOR object `ISUCONTRCT`.

Creating the Outbound Service for Contracts in the SOA Manager Tool

You create the sales contract outbound service in the SOA Manager tool for the data exchange from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

Procedure

1. Use transaction `SOAMANAGER`.
2. Under the **Service Administration** tab, choose **Web Service Configuration**.
3. Search for the `CO_ISU_MKT_UTILITIES_CONTRACT` object name.
4. Choose the internal name of the object.
5. Choose **Create** and then select **Manual Configuration**.
6. Configure the logical port name as follows and then choose **Next**.
 - a. In the **Logical Port Name** field, enter `LP_` followed by the logical port name of the system to which you're connecting.
 - b. Select the **Logical Port is Default** checkbox.
 - c. Enter a description such as `Utilities Contract Replication`.
7. Configure the consumer security with one of the following forms of authentication and then choose **Next**:
 - **Basic Authentication**

Enter the user ID and password that you use to connect to your SAP-Cloud-Integration tenant.

Note

By default, the **User ID / Password** radio button is selected.
 - **Certificate-Based Authentication**
 - a. Select the **X.509 SSL Client Certificate** radio button.

- b. Choose the value help of the **SSL Client PSE** of transaction **STRUST** field.
 - c. Choose the PSE in which the client certificate that was issued by Certification Authority (CA) and supported by SAP-Cloud-Integration is stored.
8. Configure the HTTP settings as follows and then choose **Next**.
- a. In the **URL** field, enter the runtime URL of SAP-Cloud-Integration and add the relative path that was chosen when configuring the integration flow for contract replication.

Example

https://<SAP Cloud Integration Tenant ID>.hana.ondemand.com:443/Utilities/ContractReplication

For information about obtaining the runtime URL from SAP-Cloud-Integration, see [Obtaining the Runtime URL from SAP Cloud Integration](#).

- b. For the proxy host, enter a name such as `Proxy`.
 - c. For the proxy host, enter a port number such as `8080`.
9. Configure the SOAP protocol as follows and then choose **Finish**.
- a. In the **RM Protocol** dropdown menu, select **SAP RM**.
 - b. In the **Message ID Protocol**, select **SAP Message ID**.
 - c. In the **Data transfer scope** dropdown menu, select **Basic Data Transfer**.

Configuring the Data Replication Framework for Contract Replication

You configure the data replication framework for contract replication.

Procedure

1. Use transaction `DRFIMG`.
2. Navigate to Customizing for [Define Technical Settings for Business Systems](#) under **Data Replication > Define Custom Settings for Data Replication > Define Technical Settings**.
3. If no business system for SAP Emarsys Customer Engagement exists yet, add a new entry for the business system for SAP Emarsys Customer Engagement and then save your changes.
4. Select the business system and then double-click the **Define Bus. Systems, BOs** node in the dialog structure.
5. Configure a new entry as follows and then save your changes.
 - a. In the **BO Type** field, enter `ISU_CNTRCT`.
 - b. Select the **System Filter** checkbox.
6. Select the business object type and then double-click the **Define Bus. Systems, BOs, Communication Channel** node in the dialog structure.
7. In the **Communication Channel** dropdown menu, select **Replication via Services** and then save your changes.
8. Navigate to Customizing for [Define Replication Models](#) under **Data Replication > Define Custom Settings for Data Replication**.
9. Configure a new entry as follows and then save your changes.
 - a. In the **Replication Model** field, enter a name.
 - b. Enter a description.
 - c. In the **Log Days** field, enter a value such as `50`.
10. Select the replication model and then double-click the **Assign Outbound Implementation** node in the dialog structure.

11. Configure a new entry as follows and then save your changes.
 - a. In the **Outbound Implementation** field, enter `ISU_CNTRCT`.
 - b. In the **Sequence** field, enter `1`.
12. Select the outbound implementation and then double-click the **Assign Target Systems for Repl. Model / Outb.Impl** node in the dialog structure.
13. Add a new entry using the business system that you created in step 3 and then save your changes.
14. Select the business system and then double-click the **Assign Outbound Parameter** node in the dialog structure.
15. Configure a new entry as follows and then save your changes.
 - a. In the **Outbound Parameter** field, enter `PACK_SIZE_BULK`.
 - b. In the **Outbound Parameter Value** field, enter a value such as `20`.
16. Double-click the **Define Replication Model** node in the dialog structure.
17. Select the replication model and then choose **Activate**.

Configuring Delta Replication for Contracts

Configure the delta replication for contracts so that when a change is made to an existing contract or a customer moves into a premise, an event is raised on the BOR object `ISUCONTRCT`.

Context

Repeat this procedure for each event linkage in the Event Linkages for Delta Replication of Contracts table.

Event Linkages for Delta Replication of Contracts

Object Type	Event	Receiver Function Module
ISUCONTRCT	CHANGED	ISU_CONTRACT_DRF_DELTA_OUT
ISUCONTRCT	CREATED	ISU_CONTRACT_DRF_DELTA_OUT
INSTLN	DEVICEADDED	ISU_CONTRACT_DRF_DELTA_OUT
INSTLN	DEVICEREMOVED	ISU_CONTRACT_DRF_DELTA_OUT
INSTLN	INSTALLEDREPLACE	ISU_CONTRACT_DRF_DELTA_OUT
INSTLN	REMOVEDREPLACE	ISU_CONTRACT_DRF_DELTA_OUT
BUDBILPLAN	CHANGED	ISU_BUDBIL_DRF_DELTA_OUT

Procedure

1. Use transaction `SWE2`.
2. Configure a new event linkage.
 - a. Add a new entry.
 - b. In the **Object Type** field, enter, for example, `ISUCONTRCT`.
 - c. In the **Event** field, enter, for example, `CHANGED`.

- d. In the [Receiver Function Module](#) field, enter, for example, ISU_CONTRACT_DRF_DELTA_OUT.
 - e. Select the [Linkage Activated](#) checkbox.
3. Save your changes.

Setting Up Sales Contract Replication

Set up SAP-Cloud-Integration and SAP S/4HANA Utilities to replicate sales contracts from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

1. [Setting Up SAP Cloud Integration for Sales Contract Replication](#)

The *Replicate Utilities Sales Contract to SAP Emarsys Customer Engagement* integration flow and the *Utilities Sales Contract - Map WSDL to XSD* message mapping are included as part of the *SAP S/4HANA Utilities Integration with SAP Emarsys Customer Engagement* integration package.

2. [Setting Up SAP S/4HANA Utilities for Sales Contract Replication](#)

Set up SAP S/4HANA Utilities to replicate sales contracts to SAP Emarsys Customer Engagement

Setting Up SAP Cloud Integration for Sales Contract Replication

The *Replicate Utilities Sales Contract to SAP Emarsys Customer Engagement* integration flow and the *Utilities Sales Contract - Map WSDL to XSD* message mapping are included as part of the *SAP S/4HANA Utilities Integration with SAP Emarsys Customer Engagement* integration package.

To set up SAP Cloud Integration for sales contract replication, you deploy the message mapping and deploy and configure the integration flow. Before proceeding, you must copy this package to your workspace, as described in [Copying an Integration Package to Your Workspace](#).

Deploying the Message Mapping for Sales Contract Replication

You deploy the *Utilities Sales Contract - Map WSDL to XSD* message mapping.

Procedure

1. Log on to the Web UI of your SAP-Cloud-Integration tenant.
2. Choose [Design](#).
3. Choose the integration package that you copied to your workspace.
4. Choose the [Artifacts](#) tab.

An overview of the artifacts that are available in the selected integration package is displayed.

5. For the artifact that you want to deploy, choose the corresponding [Actions](#) dropdown menu and then choose [Deploy](#).

A message is displayed informing you that the message mapping is triggered for deployment.

6. Wait until a subsequent message is displayed informing you that the message mapping is successfully deployed.

Deploying and Configuring the Integration Flow for Sales Contract Replication

You deploy and configure the *Replicate Utilities Contract to SAP Emarsys Customer Engagement* integration flow.

Procedure

1. Log on to the Web UI of your SAP-Cloud-Integration tenant.
2. Choose [Design](#).
3. Choose the integration package that you copied to your workspace.
4. Choose the [Artifacts](#) tab.

An overview of the artifacts that are available in the selected integration package is displayed.

5. For the artifact that you want to configure, choose the corresponding [Actions](#) dropdown menu and then choose [Configure](#).
6. Choose the [Sender](#) tab and then configure as follows:

Note

The [Sender](#) tab corresponds to SAP S/4HANA Utilities, and the [Receiver](#) tab corresponds to SAP Emarsys Customer Engagement.

- a. In the [Sender](#) dropdown menu, select [SAPS4HANAUtilities](#).
- b. In the [Adapter Type](#) dropdown menu, select [SOAP](#).
- c. In the [Address](#) field, enter the relative path that you will use to expose this integration flow. This path must be unique to your SAP-Cloud-Integration tenant.

Example /Utilities/SalesContractReplication

- d. In the [Authorization](#) dropdown menu, select [User Role](#).

7. Choose the [Receiver](#) tab and then configure as follows:

- a. In the [Receiver](#) dropdown menu, select [SAPEmarsysCustomerEngagement](#).
- b. In the [Adapter Type](#) dropdown menu, select [JDBC](#).
- c. In the [JDBC Data Source Alias](#) field, enter the name of the JDBC Data Source Alias.
- d. In the [Connection Timeout \(in s\)](#) field, enter the connection timeout in seconds.
- e. In the [Query/Response Timeout \(in s\)](#) field, enter the query/response timeout in seconds.
- f. In the [Maximum Records](#) field, enter the maximum number of fetched records.

8. Choose the [More](#) tab.

- a. In the [customer_extension_enabled](#) field, enter [false](#) if no custom extensions are to be enabled.
- b. In the [customer_errorhandler_enabled](#) field, enter [false](#) if no custom extension error handler is to be enabled.
- c. In the [db_contract field](#) field, enter the name of the database where the premise data is to be stored.

Example ISU.sales_contract

- d. In the [transaction_handling](#) dropdown menu, select [Not Required](#).

9. Return to the [Artifacts](#) tab.

10. For the artifact that you want to deploy, choose the corresponding **Actions** dropdown menu and then choose **Deploy**.
A message is displayed informing you that the integration flow is triggered for deployment.
11. Wait until a subsequent message is displayed informing you that the integration flow is successfully deployed.

Setting Up SAP S/4HANA Utilities for Sales Contract Replication

Set up SAP S/4HANA Utilities to replicate sales contracts to SAP Emarsys Customer Engagement.

1. [Creating the Outbound Service for Sales Contracts in the SOA Manager Tool](#)

You create the sales contract outbound service in the SOA Manager tool for the data exchange from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

2. [Configuring the Data Replication Framework for Sales Contract Replication](#)

You configure the data replication framework for sales contract replication.

3. [Configuring Delta Replication of Sales Contracts](#)

Configure the delta replication of sales contracts so that events are raised when a change is made to an existing sales contract.

Creating the Outbound Service for Sales Contracts in the SOA Manager Tool

You create the sales contract outbound service in the SOA Manager tool for the data exchange from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

Procedure

1. Use transaction `SOAMANAGER`.
2. Under the **Service Administration** tab, choose **Web Service Configuration**.
3. Search for the `CO_ISU_MKT_UTILITIES_SALES_CON` object name.
4. Choose the internal name of the object.
5. Choose **Create** and then select **Manual Configuration**.
6. Configure the logical port name as follows and then choose **Next**.
 - a. In the **Logical Port Name** field, enter `LP_` followed by the logical port name of the system to which you're connecting.
 - b. Select the **Logical Port is Default** checkbox.
 - c. Enter a description such as `Utilities Sales Contract Replication`.
7. Configure the consumer security with one of the following forms of authentication and then choose **Next**:
 - o Basic Authentication

Enter the user ID and password that you use to connect to your SAP-Cloud-Integration tenant.

Note

By default, the **User ID / Password** radio button is selected.

- o Certificate-Based Authentication

Select the [X.509 SSL Client Certificate](#) radio button.

- Choose the value help of the [SSL Client PSE of transaction STRUST](#) field.
 - Choose the PSE in which the client certificate that was issued by Certification Authority (CA) and supported by SAP-Cloud-Integration is stored.
- Configure the HTTP settings as follows and then choose [Next](#).
 - In the [URL](#) field, enter the runtime URL from SAP-Cloud-Integration and add the relative path that was chosen when configuring the integration flow for sales contract replication.

Example

<https://<SAP Cloud Integration Tenant ID>.hana.ondemand.com:443/Utilities/SalesContractReplication>

For information about obtaining the runtime URL from SAP-Cloud-Integration, see [Obtaining the Runtime URL from SAP Cloud Integration](#).

- For the proxy host, enter a name such as `Proxy`.
 - For the proxy host, enter a port number such as `8080`.
- Configure the SOAP protocol as follows and then choose [Finish](#).
 - In the [RM Protocol](#) dropdown menu, select [SAP RM](#).
 - In the [Message ID Protocol](#), select [SAP Message ID](#).
 - In the [Data transfer scope](#) dropdown menu, select [Basic Data Transfer](#).

Configuring the Data Replication Framework for Sales Contract Replication

You configure the data replication framework for sales contract replication.

Procedure

- Use transaction `DRFIMG`.
- Navigate to Customizing for [Define Technical Settings for Business Systems](#) under [Data Replication](#) > [Define Custom Settings for Data Replication](#) > [Define Technical Settings](#).
- If no business system for SAP Emarsys Customer Engagement exists yet, add a new entry for the business system for SAP Emarsys Customer Engagement and then save your changes.
- Select the business system and then double-click the [Define Bus. Systems, BOs](#) node in the dialog structure.
- Configure a new entry as follows and then save your changes.
 - In the [BO Type](#) field, enter `ISU_SCNTRC`.
 - Select the [System Filter](#) checkbox.
- Select the business object type and then double-click the [Define Bus. Systems, BOs, Communication Channel](#) node in the dialog structure.
- In the [Communication Channel](#) dropdown menu, select [Replication via Services](#) and then save your changes.
- Navigate to Customizing for [Define Replication Models](#) under [Data Replication](#) > [Define Custom Settings for Data Replication](#).
- Configure a new entry as follows and then save your changes.
 - In the [Replication Model](#) field, enter a name.
 - Enter a description.

- c. In the **Log Days** field, enter a value such as 50.
10. Select the replication model and then double-click the **Assign Outbound Implementation** node in the dialog structure.
11. Configure a new entry as follows and then save your changes.
 - a. In the **Outbound Implementation** field, enter ISU_SCNTRC.
 - b. In the **Sequence** field, enter 1.
12. Select the outbound implementation and then double-click the **Assign Target Systems for Repl. Model / Outb.Impl** node in the dialog structure.
13. Add a new entry using the business system that you created in step 3 and then save your changes.
14. Select the business system and then double-click the **Assign Outbound Parameter** node in the dialog structure.
15. Configure a new entry as follows and then save your changes.
 - a. In the **Outbound Parameter** field, enter PACK_SIZE_BULK.
 - b. In the **Outbound Parameter Value** field, enter a value such as 20.
16. Double-click the **Define Replication Model** node in the dialog structure.
17. Select the replication model and then choose **Activate**.

Configuring Delta Replication for Sales Contracts

Configure the delta replication for sales contracts so that events are raised when a change is made to an existing sales contract.

Context

Repeat this procedure for each event linkage in the Event Linkages for Delta Replication of Sales Contracts table.

Event Linkages for Delta Replication of Sales Contracts

Object Category	Object Type	Event	Receiver Function Module
ABAP CLASS	CL_CRMS4_IU_CONTRACT_EVENT	CHANGED	ISU_SALESCNTRCT_DRF_DELTA_OUT
BOR	INSTLN	CHANGED	ISU_SALESCNTRCT_DRF_DELTA_OUT

Procedure

1. Use transaction SWE2.
2. Configure a new event linkage.
 - a. Add a new entry.
 - b. In the **Object Category Type** field, enter, for example, ABAP CLASS or BOR.
 - c. In the **Object Type** field, enter, for example, CL_CRMS4_IU_CONTRACT_EVENT or INSTLN.
 - d. In the **Event** field, enter, for example, CHANGED.
 - e. In the **Receiver Function Module** field, enter, for example, ISU_SALESCNTRCT_DRF_DELTA_OUT.
 - f. Select the **Linkage Activated** checkbox.
3. Save your changes.

Setting Up Installation and Installation Facts Replication

Set up SAP-Cloud-Integration and SAP S/4HANA Utilities to replicate installations and installation facts from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

1. [Setting Up SAP Cloud Integration for Installation and Installation Facts Replication](#)

The Replicate Utilities Installation to *SAP Emarsys Customer Engagement* integration flow is included as part of the *SAP S/4HANA Utilities Integration with SAP Emarsys Customer Engagement* integration package.

2. [Setting Up SAP S/4HANA Utilities for Installation and Installation Facts Replication](#)

Set up SAP S/4HANA Utilities to replicate contracts to SAP Emarsys Customer Engagement.

Setting Up SAP Cloud Integration for Installation and Installation Facts Replication

The *Replicate Utilities Installation to SAP Emarsys Customer Engagement* integration flow, the *Utilities Installation - Map WSDL to XSD* message mapping and the *Utilities Installation Facts - Map XSD to XSD* message mapping are included as part of the *SAP S/4HANA Utilities Integration with SAP Emarsys Customer Engagement* integration package.

To set up SAP Cloud Integration for installation and installation facts replication, you deploy the message mapping and configure the integration flow. Before proceeding, you must copy this package to your workspace, as described in [Copying an Integration Package to Your Workspace](#).

Deploying the Message Mappings for Installation and Installation Facts Replication

You deploy the *Utilities Installation - Map WSDL to XSD* and *Utilities Installation Facts - Map XSD to XSD* message mappings.

Procedure

1. Log on to the Web UI of your SAP-Cloud-Integration tenant.
2. Choose **Design**.
3. Choose the integration package that you copied to your workspace.
4. Choose the **Artifacts** tab.

An overview of the artifacts that are available in the selected integration package is displayed.

5. For the artifact that you want to deploy, choose the corresponding **Actions** dropdown menu and then choose **Deploy**.

A message is displayed informing you that the integration flow is triggered for deployment.

6. Wait until a subsequent message is displayed informing you that the message mapping is successfully deployed.

Deploying and Configuring the Integration Flow for Installation and Installation Facts Replication

You deploy and configure the *Replicate Utilities Installation to SAP Emarsys Customer Engagement* integration flow.

Procedure

1. Log on to the Web UI of your SAP-Cloud-Integration tenant.
2. Choose [Design](#).
3. Choose the integration package that you copied to your workspace.
4. Choose the [Artifacts](#) tab.

An overview of the artifacts that are available in the selected integration package is displayed.

5. For the artifact that you want to configure, choose the corresponding [Actions](#) dropdown menu and then choose [Configure](#).
6. Choose the [Sender](#) tab and then configure as follows:

Note

The [Sender](#) tab corresponds to SAP S/4HANA Utilities, and the [Receiver](#) tab corresponds to SAP Emarsys Customer Engagement.

- a. In the [Sender](#) dropdown menu, select [SAPS4HANAUilities](#).
- b. In the [Adapter Type](#) dropdown menu, select [SOAP](#).
- c. In the [JDBC Data Source Alias](#) field, enter the name of the JDBC Data Source Alias.

Example /Utilities/InstallationReplication

- d. In the [Authorization](#) dropdown menu, select the appropriate User Role.

7. Choose the [Receiver](#) tab and then configure as follows:

- a. In the [Receiver](#) dropdown menu, select [SAPEmarsysCustomerEngagement](#).
- b. In the [Adapter Type](#) dropdown menu, select [JDBC](#).
- c. In the [JDBC Data Source Alias](#) field, enter the name of the JDBC Data Source Alias.
- d. In the [Connection Timeout \(in s\)](#) field, enter the connection timeout in seconds.
- e. In the [Query/Response Timeout \(in s\)](#) field, enter the query/response timeout in seconds.
- f. In the [Maximum Records](#) field, enter the enter the maximum number of fetched records

8. Choose the [More](#) tab.

- a. In the [customer_extension_enabled](#) field, enter [false](#) if no custom extensions are to be enabled.
- b. In the [customer_errorhandler_enabled](#) field, enter [false](#) if no custom extension error handler is to be enabled.
- c. In the [db_installation](#) field field, enter the name of the database where the installation data is to be stored.

Example ISU.installation

- d. In the [db_installation_facts](#) field, enter the name of the database where the installation data is to be stored.

□ **Example**
ISU.installation_facts

- e. In the `transaction_handling` dropdown menu, select **Not Required**.
9. Return to the **Artifacts** tab.
10. For the artifact that you want to deploy, choose the corresponding **Actions** dropdown menu and then choose **Deploy**.
A message is displayed informing you that the integration flow is triggered for deployment.
11. Wait until a subsequent message is displayed informing you that the integration flow is successfully deployed.

Setting Up SAP S/4HANA Utilities for Installation and Installation Facts Replication

Set up SAP S/4HANA Utilities to replicate installations and installation facts to SAP Emarsys Customer Engagement.

1. [Creating the Outbound Service for Installations and Installation Facts in the SOA Manager](#)

You create the installation and installation facts outbound service in the SOA Manager tool for the data exchange from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

2. [Configuring the Data Replication Framework for Installation and Installation Facts Replication](#)

Configure the data replication framework to replicate installations and installation facts to SAP Emarsys Customer Engagement.

3. [Configuring the Delta Replication of Installation and Installation Facts](#)

Configure the delta replication of installations and installation facts so that when a change is made to an existing installation, a customer moves in or out of a premise, or a move-out is reversed an event is raised on the BOR object INSTLN.

4. [Customizing for the Replication of Installation Facts](#)

Specify operands (installation facts) that are replicated from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

5. [Implementing Logic for Installation Facts](#)

For each operand (installation fact) that you specified in the Customizing for operands (installation facts), assign values to the relevant fields in the `UtilitiesInstallationBulkReplicateRequest_Out` SOA service.

Creating the Outbound Service for Installations and Installation Facts in the SOA Manager

You create the installation and installation facts outbound service in the SOA Manager tool for the data exchange from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

Procedure

1. Use transaction `SOAMANAGER`.
2. Under the **Service Administration** tab, choose **Web Service Configuration**.
3. Search for the `CO_ISU_MKT_UTILITIES_INSTALLATION` object name.

4. Choose the internal name of the object.
5. Choose **Create** and then select **Manual Configuration**.
6. Configure the logical port name as follows and then choose **Next**.
 - a. In the **Logical Port Name** field, enter `LP_` followed by the logical port name of the system to which you're connecting.
 - b. Select the **Logical Port is Default** checkbox.
 - c. Enter a description such as `Installation and Installation Facts Replication`.

7. Configure the consumer security with one of the following forms of authentication and then choose **Next**:

- o Basic Authentication

Enter the user ID and password that you use to connect to your SAP-Cloud-Integration tenant.

- Note**

By default, the **User ID / Password** radio button is selected.

- o Certificate-Based Authentication

- a. Select the **X.509 SSL Client Certificate** radio button.
- b. Choose the value help of the **SSL Client PSE of transaction STRUST** field.
- c. Choose the PSE in which the client certificate that was issued by Certification Authority (CA) and supported by SAP-Cloud-Integration is stored.

8. Configure the HTTP settings as follows and then choose **Next**.

- a. In the **URL** field, enter the runtime URL of SAP-Cloud-Integration and add the relative path that was chosen when configuring the integration flow for installation replication.

- Example**

`https://<SAP Cloud Integration Tenant ID>.hana.ondemand.com:443/Utilities/InstallationReplication`

For information about obtaining the runtime URL from SAP-Cloud-Integration, see [Obtaining the Runtime URL from SAP Cloud Integration](#).

- b. For the proxy host, enter a name such as `Proxy`.
- c. For the proxy host, enter a port number such as `8080`.

9. Configure the SOAP protocol as follows and then choose **Finish**.

- a. In the **RM Protocol** dropdown menu, select **SAP RM**.
- b. In the **Message ID Protocol**, select **SAP Message ID**.
- c. In the **Data transfer scope** dropdown menu, select **Basic Data Transfer**.

Configuring the Data Replication Framework for Installation and Installation Facts Replication

Configure the data replication framework to replicate installations and installation facts to SAP Emarsys Customer Engagement.

Procedure

1. Use transaction `DRFIMG`.

2. Navigate to Customizing for [Define Technical Settings for Business Systems](#) under [Data Replication](#) > [Define Custom Settings for Data Replication](#) > [Define Technical Settings](#).
3. If no business system for SAP Emarsys Customer Engagement exists yet, add a new entry for the business system for SAP Emarsys Customer Engagement and then save your changes.
4. Select the business system and then double-click the [Define Bus. Systems, BOs](#) node in the dialog structure.
5. Configure a new entry as follows and then save your changes.
 - a. In the [BO Type](#) field, enter `ISU_INSTLN`.
 - b. Select the [System Filter](#) checkbox.
6. Select the business object type and then double-click the [Define Bus. Systems, BOs, Communication Channel](#) node in the dialog structure.
7. In the [Communication Channel](#) dropdown menu, select [Replication via Services](#) and then save your changes.
8. Navigate to Customizing for [Define Replication Models](#) under [Data Replication](#) > [Define Custom Settings for Data Replication](#).
9. Configure a new entry as follows and then save your changes:
 - a. In the [Replication Model](#) field, enter a name.
 - b. Enter a description.
 - c. In the [Log Days](#) field, enter a value such as 50.
10. Select the replication model and then double-click the [Assign Outbound Implementation](#) node in the dialog structure.
11. Configure a new entry as follows and then save your changes.
 - a. In the [Outbound Implementation](#) field, enter `ISU_INSTLN`.
 - b. In the [Sequence](#) field, enter 1.
12. Select the outbound implementation and then double-click the [Assign Target Systems for Repl. Model / Outb.Impl](#) node in the dialog structure.
13. Add a new entry using the business system that you created in step 3 and then save your changes.
14. Select the business system and then double-click the [Assign Outbound Parameter](#) node in the dialog structure.
15. Configure a new entry as follows and then save your changes:
 - a. In the [Outbound Parameter](#) field, enter `PACK_SIZE_BULK`.
 - b. In the [Outbound Parameter Value](#) field, enter a value such as 20.
16. Double-click the [Define Replication Model](#) node in the dialog structure.
17. Select the replication model and then choose [Activate](#).

Configuring Delta Replication for Installation and Installation Facts

Configure the delta replication of installations and installation facts so that when a change is made to an existing installation, a customer moves in or out of a premise, or a move-out is reversed an event is raised on the BOR object `INSTLN`.

Procedure

1. Use transaction `SWE2`.
2. Configure a new event linkage for changes that are made to installations.

- a. Add a new entry.
 - b. In the **Object Type** field, enter `INSTLN`.
 - c. In the **Event** field, enter `CHANGED`.
 - d. In the **Receiver Function Module** field, enter `ISU_INSTALLATION_DRF_DELTA_OUT`.
 - e. Select the **Linkage Activated** checkbox.
3. Configure a new event linkage for when a customer moves into a premise.
 - a. Add a new entry.
 - b. In the **Object Type** field, enter `INSTLN`.
 - c. In the **Event** field, enter `MOVEINOCURRED`.
 - d. In the **Receiver Function Module** field, enter `ISU_INSTALLATION_DRF_DELTA_OUT`.
 - e. Select the **Linkage Activated** checkbox.
 4. Configure a new event linkage for when a customer moves out of a premise.
 - a. Add a new entry.
 - b. In the **Object Type** field, enter `INSTLN`.
 - c. In the **Event** field, enter `MOVEOUTOCCURRED`.
 - d. In the **Receiver Function Module** field, enter `ISU_INSTALLATION_DRF_DELTA_OUT`.
 - e. Select the **Linkage Activated** checkbox.
 5. Configure a new event linkage for when a customer moves out of a premise.
 - a. Add a new entry.
 - b. In the **Object Type** field, enter `INSTLN`.
 - c. In the **Event** field, enter `MOVEOUTREVERSED`.
 - d. In the **Receiver Function Module** field, enter `ISU_INSTALLATION_DRF_DELTA_OUT`.
 - e. Select the **Linkage Activated** checkbox.
6. Save your changes.

Customizing for the Replication of Installation Facts

Specify operands (installation facts) that are replicated from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

Context

Repeat this procedure for each operand (installation fact) that you will replicate. For more information about Customizing for the replication of operands (installation facts), see the Customizing activity documentation.

Procedure

1. Use **Specify Operands (Installation Facts) for Replication** (transaction `ISU_MKT_INSFACT_IMG`), or use **Customizing - Execute Project** (transaction `SPRO`) and navigate to Customizing for **Specify Operands (Installation Facts) for Replication** under **SAP Utilities > Customer Service > Marketing Integration > Replication > Replication of Installation Facts**.
2. Specify an operand (installation fact) for replication.
 - a. Create a new entry.
 - b. Enter an operand.

c. Optionally, enter a text for the installation fact in SAP Emarsys Customer Engagement.

□ **Note**

The text for the installation fact in SAP Emarsys Customer Engagement is used in the integration flow for mapping to the identifier of the installation fact that you created when creating custom fields for installation fact replication.

3. Maintain the [Replicate](#) checkbox.

4. Save your changes.

Implementing Logic for Installation Facts

For each operand (installation fact) that you specified in the Customizing for operands (installation facts), assign values to the relevant fields in the `UtilitiesInstallationBulkReplicateRequest_Out` SOA service.

Prerequisites

You have specified operands (installation facts) in Customizing for the replication of operands (installation facts).

Procedure

1. Access the `ISU_MKT_INSTLN_SOA` BAdI implementation. For more information, see [Business Add-In Implementation](#).
2. Update the `FETCH_DETAILS` method of the BAdI implementation.
3. Make changes in this method for each operand in order to assign the values to the relevant fields. A sample code has been provided in this method for various types of operands.
4. Save your changes.

Setting Up General Data Replication

Set up SAP-Cloud-Integration and SAP S/4HANA Utilities to replicate balance and consumption data in SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

1. [Setting Up SAP Cloud Integration for General Data Replication](#)

The *Replicate Utilities General Data to SAP Emarsys Customer Engagement* integration flow is included as part of the *SAP S/4HANA Utilities Integration with SAP Emarsys Customer Engagement* integration package.

2. [Setting Up SAP S/4HANA Utilities for General Data Replication](#)

Set up SAP S/4HANA Utilities to replicate general data to SAP Emarsys Customer Engagement.

Setting Up SAP Cloud Integration for General Data Replication

The *Replicate Utilities General Data to SAP Emarsys Customer Engagement* integration flow, the *Utilities General Data Balance - Map WSDL to XSD* message mapping, and the *Utilities General Data Consumption - Map XSD to XSD* message mapping are part of the *SAP S/4HANA Utilities Integration with SAP Emarsys Customer Engagement* integration package.

To set up SAP Cloud Integration for general data replication, you deploy the message mappings and configure the integration flow. Before proceeding, this integration package must be copied to your workspace, as described in [Copying an Integration Package to Your Workspace](#).

This is custom documentation. For more information, please visit the [SAP Help Portal](#)

Deploying the Message Mappings for General Data Replication

You deploy the *Utilities General Data Balance - Map WSDL to XSD* and *Utilities General Data Consumption - Map XSD to XSD* message mappings.

Procedure

1. Log on to the Web UI of your SAP-Cloud-Integration tenant.
2. Choose [Design](#).
3. Choose the integration package that you copied to your workspace.
4. Choose the [Artifacts](#) tab.

An overview of the artifacts that are available in the selected integration package is displayed.

5. For the artifact that you want to deploy, choose [Actions](#) and then choose [Deploy](#).

A message is displayed informing you that the message mapping is triggered for deployment.

6. Wait until a subsequent message is displayed informing you that the message mapping is successfully deployed.

Deploying and Configuring the Integration Flow for General Data Replication

You deploy and configure the *Replicate Utilities General Data* integration flow.

Procedure

1. Log on to the Web UI of your SAP-Cloud-Integration tenant.
2. Choose [Design](#).
3. Choose the integration package that you copied to your workspace.
4. Choose the [Artifacts](#) tab.

An overview of the artifacts that are available in the selected integration package is displayed.

5. For the artifact that you want to configure, choose the corresponding [Actions](#) dropdown menu and then choose [Configure](#).

6. Choose the [Sender](#) tab and then configure as follows:

Note

The [Sender](#) tab corresponds to SAP S/4HANA Utilities, and the [Receiver](#) tab corresponds to SAP Emarsys Customer Engagement.

- a. In the [Sender](#) dropdown menu, select [SAPS4HANAUtilities](#).
- b. In the [Adapter Type](#) dropdown menu, select [SOAP](#).
- c. In the [Address](#) field, enter the relative path that you will use to expose this integration flow. This path must be unique to your SAP-Cloud-Integration tenant.

Example
/Utilities/GeneralDataReplication

7. Choose the **Receiver** tab and then configure as follows:

- a. In the **Receiver** dropdown menu, select **SAPEmarsysCustomerEngagement**.
- b. In the **Adapter Type** dropdown menu, select **JDBC**.
- c. In the **JDBC Data Source Alias** field, enter the name of the JDBC Data Source Alias. **tenant**.
- d. In the **Connection Timeout (in s)** field, enter the connection timeout in seconds.
- e. In the **Query/Response Timeout (in s)** field, enter the query/response timeout in seconds.
- f. In the **Maximum Records** field, enter the maximum number of fetched records.

8. Choose the **More** tab and configure as follows:

- a. In the **customer_extension_enabled** field, enter **false** if no custom extensions are to be enabled.
- b. In the **customer_errorhandler_enabled** field, enter **false** if no custom extension error handler is to be enabled.
- c. In the **db_balance** field, enter the name of the database where the balance data is to be stored.

Example
ISU.balance

- d. In the **db_consumption** field, enter the name of the database where the consumption data is to be stored.

Example
ISU.consumption

- e. In the **transaction_handling** dropdown menu, select **Not Required**.

9. Return to the **Artifacts** tab.

10. For the artifact that you want to deploy, choose the corresponding **Actions** dropdown menu and then choose **Deploy**.

A message is displayed informing you that the integration flow is triggered for deployment.

11. Wait until a subsequent message is displayed informing you that the integration flow is successfully deployed.

Setting Up SAP S/4HANA Utilities for General Data Replication

Set up SAP S/4HANA Utilities to replicate general data to SAP Emarsys Customer Engagement.

1. [Creating the Outbound Service for General Data Replication in the SOA Manager Tool](#)

Using the SOA Manager tool for the data exchange from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement, you create the outbound service for general data replication.

2. [Configuring the Data Replication Framework for General Data Replication](#)

You configure the data replication framework for general data replication.

Creating the Outbound Service for General Data Replication in the SOA Manager Tool

Using the SOA Manager tool for the data exchange from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement, you create the outbound service for general data replication.

Procedure

1. Use transaction `SOAMANAGER`.
2. Under the **Service Administration** tab, choose **Web Service Configuration**.
3. Search for the `CO_ISU_MKT_UTILITIES_GENERAL_D` object name.
4. Choose the internal name of the object.
5. Choose **Create** and then select **Manual Configuration**.
6. Configure the logical port name as follows and then choose **Next**.
 - a. In the **Logical Port Name** field, enter `LP_` followed by the logical port name of the system to which you're connecting.
 - b. Select the **Logical Port is Default** checkbox.
 - c. Enter a description such as `General Data Replication`.
7. Configure the consumer security with one of the following forms of authentication and then choose **Next**:
 - o **Basic Authentication**

Enter the user ID and password that you use to connect to your SAP-Cloud-Integration tenant.

Note
By default, the **User ID / Password** radio button is selected.
 - o **Certificate-Based Authentication**
 - a. Select the **X.509 SSL Client Certificate** radio button.
 - b. Choose the value help of the **SSL Client PSE** of transaction `STRUST` field.
 - c. Choose the PSE in which the client certificate that was issued by Certification Authority (CA) and supported by SAP-Cloud-Integration is stored.
8. Configure the HTTP settings as follows and then choose **Next**.
 - a. In the **URL** field, enter the runtime URL of SAP-Cloud-Integration and add the relative path that was chosen when configuring the integration flow for general data replication.

Example
`https://<SAP Cloud Integration Tenant ID>.hana.ondemand.com:443/Utilities/GeneralDataReplication`

For information about obtaining the runtime URL from SAP-Cloud-Integration, see [Obtaining the Runtime URL from SAP Cloud Integration](#).
 - b. For the proxy host, enter a name such as `Proxy`.
 - c. For the proxy host, enter a port number such as `8080`.
9. Configure the SOAP protocol as follows and then choose **Finish**.
 - a. In the **RM Protocol** dropdown menu, select **SAP RM**.
 - b. In the **Message ID Protocol**, select **SAP Message ID**.
 - c. In the **Data transfer scope** dropdown menu, select **Basic Data Transfer**.

Configuring the Data Replication Framework for General Data Replication

You configure the data replication framework for general data replication.

Procedure

1. Use transaction `DRFIMG`.
2. Navigate to Customizing for [Define Technical Settings for Business Systems](#) under [Data Replication](#) > [Define Custom Settings for Data Replication](#) > [Define Technical Settings](#).
3. If no business system for SAP Emarsys Customer Engagement exists yet, add a new entry for the business system of SAP Emarsys Customer Engagement and then save your changes.
4. Select the business system and then double-click the [Define Bus. Systems, BOs](#) node in the dialog structure.
5. Configure a new entry as follows and then save your changes.
 - a. In the [BO Type](#) field, enter `ISU_GNRL`.
 - b. Select the [System Filter](#) checkbox.
6. Select the business object type and then double-click the [Define Bus. Systems, BOs, Communication Channel](#) node in the dialog structure.
7. In the [Communication Channel](#) dropdown menu, select [Replication via Services](#) and then save your changes.
8. Navigate to Customizing for [Define Replication Models](#) under [Data Replication](#) > [Define Custom Settings for Data Replication](#).
9. Configure a new entry as follows and then save your changes.
 - a. In the [Replication Model](#) field, enter a name.
 - b. Enter a description.
 - c. In the [Log Days](#) field, enter a value such as 50.
10. Select the replication model and then double-click the [Assign Outbound Implementation](#) node in the dialog structure.
11. Configure a new entry as follows and then save your changes.
 - a. In the [Outbound Implementation](#) field, enter `ISU_GNRL`.
 - b. In the [Sequence](#) field, enter 1.
12. Select the outbound implementation and then double-click the [Assign Target Systems for Repl. Model / Outb.Impl](#) node in the dialog structure.
13. Add a new entry using the business system that you created in step 3 and then save your changes.
14. Select the business system and then double-click the [Assign Outbound Parameter](#) node in the dialog structure.
15. Configure a new entry as follows and then save your changes.
 - a. In the [Outbound Parameter](#) field, enter `PACK_SIZE_BULK`.
 - b. In the [Outbound Parameter Value](#) field, enter a value such as 20.
16. Double-click the [Define Replication Model](#) node in the dialog structure.
17. Select the replication model and then choose [Activate](#).

Setting Up SAP Emarsys Customer Engagement

Set up SAP Emarsys Customer Engagement to retrieve the replicated data.

More information can be found in the Relational Data Overview chapter of the [Emarsys Help](#).

Finishing the Setup

Checking the Deployment Status of the Integration Flows

If an error occurs during deployment, SAP-Cloud-Integration stops the deployment of your integration flows. You should check that your integration flows are deployed.

Procedure

1. Log on to SAP-Cloud-Integration.
2. Choose **Monitor**.
3. In the **Manage Integration Content** section, choose **All** to display all of the artifacts regardless of their deployment status.
4. Check that your integration flows are deployed.

Monitoring

You can use tools to monitor and troubleshoot the workflow for data replication.

- [Displaying the Data Replication Framework Logs](#)

Using the data replication framework logs, you can view the status of the replication messages to troubleshoot replication errors between SAP S/4HANA Utilities and SAP Cloud Integration.

- [Displaying Logs of the SOA Manager Tool](#)

You can use the message monitor function in the SOA Manager tool to monitor and troubleshoot messages from SAP S/4HANA Utilities to SAP Cloud Integration.

- [Using the Monitor Application in SAP Cloud Integration](#)

You can use the Monitor application in SAP Cloud Integration to monitor and troubleshoot the outbound replication request from SAP Cloud Integration to SAP Emarsys Customer Engagement.

- [Using Event Traces](#)

Events for the delta replication of objects, such as contracts and premises are added to an event processing queue. Depending on the configuration of the event processing queue, replication requests are sent immediately or await processing in the queue.

Displaying the Data Replication Framework Logs

Using the data replication framework logs, you can view the status of the replication messages to troubleshoot replication errors between SAP S/4HANA Utilities and SAP-Cloud-Integration.

Procedure

1. Use transaction `DRFLOG`.
2. Select a replication model.

3. Specify the filtering criteria.
4. Choose [Execute](#).

Logs of the replication request messages and their color-coded, shape-specific status indicators are displayed.

Displaying Logs of the SOA Manager Tool

You can use the message monitor function in the SOA Manager tool to monitor and troubleshoot messages from SAP S/4HANA Utilities to SAP Cloud Integration.

Procedure

1. Call transaction `SOAMANAGER`.
2. Go to [Monitoring](#).
3. Choose [Message-Monitoring](#).
4. Define Filter Criteria.
 - a. Enter a time frame for [Timestamp from](#) und [Timestamp to](#).
 - b. Enter the Message-ID.
5. Choose [Execute](#).

All outgoing requests along with the status are shown.

Using the Monitor Application in SAP Cloud Integration

You can use the Monitor application in SAP Cloud Integration to monitor and troubleshoot the outbound replication request from SAP Cloud Integration to SAP Emarsys Customer Engagement.

Procedure

1. Log on to the Web UI of your SAP Cloud Integration tenant.
2. Choose [Monitor](#).
3. In the [Monitor Message Processing](#) section, choose [All Integration Flows](#).

Using Event Traces

Events for the delta replication of objects are added to an event processing queue. Depending on the configuration of the event processing queue, replication requests are sent immediately or await processing in the queue.

Procedure

1. Enable event traces.
 - a. In SAP S/4HANA Utilities, use transaction `SWELS`.

- b. Choose **Switch On**.
 - c. Choose **Continue**.
2. Display event traces.
 - a. In SAP S/4HANA Utilities, use transaction `SWEL`.
 - b. Specify the filtering criteria.
 - c. Choose **Execute**.

The BOR object type, the triggered event, and the handler function module and status are displayed.

Using the Replication Services

After you've configured the replication services, you can use them to replicate data from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement.

To satisfy dependencies between business objects and data, replicate them in the following order:

1. Business partner
2. Premise
3. Contract account
4. Product
5. Contract or sales contract
6. Installation and general data

□ Note

The integration flow for installation needs to be configured for utilities contracts. The integration flow for sales contracts includes replication of installation and installation facts.

[Performing the Initial Replication](#)

You use the data replication framework to replicate all existing data for the relevant business objects from SAP S/4HANA Utilities to initially populate SAP Emarsys Customer Engagement.

[Replicating Changes \(Delta Replication\)](#)

After performing the initial replication, any new record or change to an existing record must be replicated to keep the databases in sync.

[Replicating Data Manually](#)

You can manually replicate the data for relevant business objects according to a specified filtering criteria.

Performing the Initial Replication

You use the data replication framework to replicate all existing data for the relevant business objects from SAP S/4HANA Utilities to initially populate SAP Emarsys Customer Engagement.

Procedure

1. Use transaction `DRFOUT`.
2. Select a replication model to specify which data will be replicated.
3. In the **Replication Mode** section, select the **Initialization** radio button.
4. Optionally, configure the **Options for Report Control** section.
 - a. Select the **Test Run Only** checkbox to display the total number of records that will be replicated.
 - b. Enable parallel processing.

Note

Currently, parallel processing can be enabled for utilities customer scores. To enable parallel processing, proceed as follows:

- i. Select the **Parallel Processing** checkbox.
 - ii. Specify a server group.
 - iii. Enter the number of work processes per your requirement.
5. Choose **Execute**.

Replicating Changes (Delta Replication)

After performing the initial replication, any new record or change to an existing record must be replicated to keep the databases in sync.

You configure delta replication for each business object and then either create a new object or update an existing object to use delta replication.

Replicate Manually

You can manually replicate the data for relevant business objects according to a specified filtering criteria with transaction `DRFOUT`.

Extensibility

You can customize the data that is replicated from SAP S/4HANA Utilities to SAP Emarsys Customer Engagement so it is suitable for your business needs.

[Modifying the Service Interface in Enterprise Services Repository](#)

When you send data to SAP Emarsys Customer Engagement, the payload for the request is defined by the corresponding service interfaces in Enterprise Services Repository.

[Business Add-In Implementation](#)

For each business object, implement the corresponding BAdI definition and interface in SAP S/4HANA Utilities to properly populate the new replication payload.

[Extending an Integration Flow](#)

Extend integration flows in SAP Cloud Integration.

Modifying the Service Interface in the Enterprise Services Repository

When you send data to SAP Emarsys Customer Engagement, the payload for the request is defined by the corresponding service interfaces in Enterprise Services Repository.

If the payload is to be changed or enhanced, the corresponding service interface definition in Enterprise Services Repository must be modified accordingly.

The following table shows the relevant service interfaces available in the Enterprise Services Repository:

Software Component	Namespace	Name
FI-CA 801	http://sap.com/xi/FICA/Global2	ContractAccountBulkReplicateRequest_Out
IS-UT 804	http://sap.com/xi/IS-U/Marketing/Global2	UtilitiesContractBulkReplicateRequest_Out
IS-UT 803	http://sap.com/xi/IS-U/Marketing/Global2	UtilitiesPremiseBulkReplicateRequest_Out
IS-UT 805	http://sap.com/xi/IS-U/Marketing/Global2	UtilitiesGeneralDataBulkReplicateRequest_Out
IS-UT 805	http://sap.com/xi/IS-U/Marketing/Global2	UtilitiesInstallationBulkReplicateRequest_Out
IS-UT 805	http://sap.com/xi/IS-U/Marketing/Global2	UtilitiesSalesContractBulkReplicateRequest_Out

Regenerating a Proxy

You update the service consumer (proxy) in SAP S/4HANA to match the new service interface definition in the Enterprise Services Repository.

Procedure

1. Use transaction `SPROXY`.
2. In the [Enterprise Services Browser](#), open the proxy that corresponds to one of the following proxy names (ABAP names):

Object	Proxy Name (ABAP Name)
Contract account	CO_FKK_MDG_CONTRACT_ACCOUNT_BU
Contract	CO_ISU_MKT_UTILITIES_CONTRACT
Sales contract	CO_ISU_MKT_UTILITIES_SALES_CON
Premise	CO_ISU_MKT_UTILITIES_PREMISE_B
General data	CO_ISU_MKT_UTILITIES_GENERAL_D
Installation	CO_ISU_MKT_UTILITIES_INSTALLAT

3. In change mode, navigate to [Regenerate](#) under [More](#) > [Proxy](#).
4. When the regeneration is complete, activate the changes.
5. Choose the [WSDL](#) tab and then save the WSDL file to your local machine.

Business Add-In Implementation

For each business object, implement the corresponding BAdI definition and interface in SAP S/4HANA Utilities to properly populate the new replication payload.

Use transaction `SPRO` and then navigate to [Business Add-Ins](#) under [SAP Utilities](#) > [Customer Service](#) > [Marketing Integration](#). The following table contains business objects and the names of their corresponding BAdI definitions and interfaces:

Business Object	BAdI Definition Name	Interface Name
Contract account	MDG_SE_FICA_BULK_RQ_OUT	IF_MDG_SE_FICA_BULK_RQ_OUT
Utilities Contract	ISU_MKT_CONTRACT_SOA	IF_ISU_MKT_CONTRACT_SOA_BADI
Utilities Premise	ISU_MKT_PREMISE_SOA	IF_ISU_MKT_PREMISE_SOA_BADI
Utilities Installation	ISU_MKT_INSTLN_SOA	IF_ISU_MKT_INSTLN_SOA_BADI
Utilities Sales Contract	ISU_MKT_SALESCONTRACT_SOA	IF_ISU_MKT_SALESCONTR_SOA_BADI
Utilities General Data	ISU_MKT_GNRL_DATA_SOA	IF_ISU_MKT_GNRL_SOA_BADI

To create a BAdI implementation, create a class that implements the `OUTBOUND_PROCESS` method of the assigned interface. This method has the following parameters:

- IN

This importing parameter contains the information of the object that's being replicated.

- OUT

This changing parameter corresponds to the payload that is sent out for replication.

For information about BAdIs, see [Enhancement Framework](#) on SAP Help Portal.

Extending an Integration Flow

Extend integration flows in SAP-Cloud-Integration.

Recommendation

We recommend that you use the post-exit component of the integration flow so that you can continue to receive updates to the default message mapping provided by the integration flows of the *SAP S/4HANA Utilities integration with SAP Emarsys Customer Engagement* integration package. For more information, see [Integration Flow Extension](#) on SAP Help Portal.

Using the Post-Exit Component in an Integration Flow for Message Mapping

Add mappings to the post-exit component.

Prerequisites

You have created a custom integration flow to use with the post-exit component.

Note

In the custom integration flow, the incoming payload structure consists of the following:

- XML with SQL statements
- Original WSDL payload with additional custom extensions

The outgoing payload structure is expected to consist of the following:

- XML with SQL statements with additional custom extensions

Example

You define a message mapping in a custom integration flow.

In the source structure you add the following:

- XSD file with the XML schema definition of the relevant elements and SQL statements whose structure is provided by the incoming payload.

- WSDL file for the original WSDL payload with additional custom extensions

In the target structure you add the following:

- XSD file with the XML schema definition of the relevant elements and SQL statements with additional custom extensions.

In the mapping editor, you connect each element in the source structure of the XSD and the additional elements in the custom extension of the WSDL to corresponding fields in the target structure (see [Creating the Custom Mapping](#) for more information). Once the message mapping is complete, you define a filter to produce the expected outgoing payload structure, only retaining the relevant elements with the XML SQL statements (see [Define Filter](#) for more information).

Context

You want to preserve the default message mapping that is delivered with the integration flow by using the post-exit extension of the integration flow.

Procedure

1. Log on to the Web UI of your SAP-Cloud-Integration tenant.
2. Choose [Design](#).
3. Choose the *SAP S/4HANA Utilities Integration with SAP Emarsys Customer Engagement* integration package.
4. Choose the [Artifacts](#) tab.
5. For the integration flow that you want to configure, choose the corresponding [Actions](#) dropdown menu and then choose [Configure](#).
6. On the [More](#) tab, enter `true` in the `customer_extension_enabled` field.
7. On the [Receiver](#) tab, specify the receiver properties.
 - a. Choose [Post-Exit](#) from the [Receiver](#) dropdown list.
 - b. Enter the address of your post-exit integration flow in the [Address](#) field.
8. Save and then deploy the integration flow.

Using the Error Handler Extension in an Integration Flow for Custom Error Handling

Add custom error handling to the error handler extension.

Prerequisites

You have created a custom integration flow to use with the error handler extension.

Note

Depending on where the error occurred in the integration flow, the payload contains the content of the last successfully processed step in the integration flow.

Context

You want to implement a custom error handler extension in the integration flow.

Procedure

1. Log on to the Web UI of your SAP-Cloud-Integration tenant.
2. Choose **Design**.
3. Choose the *SAP S/4HANA Utilities Integration with SAP Emarsys Customer Engagement* integration package.
4. Choose the **Artifacts** tab.
5. For the integration flow that you want to configure, choose the corresponding **Actions** dropdown menu and then choose **Configure**.
6. On the **More** tab, enter `true` in the `customer_errorhandler_enabled` field.
7. On the **Receiver** tab, specify the receiver properties.
 - a. Choose **Error-Handler** from the **Receiver** dropdown list.
 - b. Enter the address of your error-handler integration flow in the **Address** field.
8. Save and then deploy the integration flow.

Support

Use SAP Support Portal at <https://support.sap.com> to report a technical problem with the configuration tasks that you performed.

Use the `IS-U-CS-MA` component to specify the notification.