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1 Prepayment for Utilities

Use

This application introduces a new utility program that allows customers to prepay for their energy consumption. This lets customers to choose how much to top-up their meter and when they pay. In particular, the application addresses customers who have smart meters but it can also be used by customers who have regular meters.

A customer who wants to register for the prepayment program must be enrolled with a new contract. The application offers a monitoring process for the prepayment customers. This monitoring is based on the prepayment account balance determination. It analyzes the consumption and remaining prepayment balance of the customers.

Once a customer falls below a certain threshold of the prepayment account balance, the application offers the possibility to raise configured events, for example, a communication event to remind the customer to pay in advance for their energy consumption or a disconnect event that could eventually disconnect the customer from the energy supply.

Alternatively, once the customer is disconnected and the prepayment account balance becomes positive again, a reconnection event can be triggered.

Integration

It is assumed that a prepayment customer is enrolled with a new contract. Prepayment for utilities provides the functionality for creation of a prepayment document so the prepayment customer (or its related contract account) is linked to a prepayment document.

Features

The prepayment for utilities application consists of the following features:

- **Prepayment document**
  The central point of entry to collect and display all prepayment relevant data. It includes up-to-date information about the usage and payment details of a customer. Furthermore, it also enables debt recovery.

- **Account balance determination**
  Determines current status with regard to usage amounts based on metering and energy prices and payment that have been made to the account of the customer. In addition, the open debt and current debt will be calculated if the daily amount is active for debt recovery. The customers have to ensure that their account balance is positive.

- **Threshold monitoring**
Keeps track of the remaining days of usage. This monitoring functionality does not require any user interface interaction or user interface functionality. It monitors prepayment documents and executes threshold checks on the selected prepayment documents. It raises defined events when key figures that need to be monitored fall below their defined threshold values.

More Information

- Prepayment Document [page 5]
- Account Balance Determination [page 9]
- Threshold Monitoring [page 14]
2 Prepayment Document

Definition

The prepayment document is the central point of entry to collect and display all prepayment relevant data.

Use

You use the prepayment document to gather all details regarding the energy consumption of a prepayment customer including document status, usage amount, payment amount and the actual debt recovery situation. Every prepayment document is linked to only one contract account to which all active contracts are assigned.

Structure

The Prepayment Document area consists of the following parts:

- **Document Header**
  This group box consists of the ID, status, category, type of a document, and has details about the SAP for Utilities (IS-U) master data that is related to the document as the contract account, customer and its address. It also provides details of whom and when the document was created and last changed.

- **Document Totals**
  This group box contains the last payment, last usage, and last balance and their respective calculation period information.

- **Contract Data**
  This tab page contains the details about all contracts, point of delivery assigned, and other contract related data, such as move-in, move-out and end of billing period date.

- **Executed Events**
  This tab page displays the various events and actions that have taken place on the prepayment document. You can configure an event with an action to be triggered automatically or manually.

- **Customized Events**
  This tab page displays the user defined events which can be triggered.

- **Debt Recovery**
  This tab page displays all debt recovery related information. Furthermore, debt recovery can be activated or deactivated, and the original debt items can be selected.

- **Data Records**
  This tab page displays the result data records of scheduled run calculations and online calculations of the prepayment account of a customer.

- **Payments**
  This tab page displays the actual FI-CA items that are configured as incoming payments.
More Information

Maintenance of Prepayment Document [page 6]

2.1 Maintenance of Prepayment Document

Use

The application offers several functions enabling you to manage a prepayment document. Depending on the discretion of an energy company and its standards, the user can decide how to handle the document of a prepayment customer under various circumstances.

Prerequisites

- You have the necessary authorization to perform frontend functionalities.
- You have made the required settings for prepayment document in Customizing under SAP Customizing Implementation Guide SAP Utilities Prepayment Prepayment Document Settings.

Features

The following actions can be performed by executing the relevant transactions:

- **Create**
  You can create a new prepayment document. Execute the transaction /PREPAY/DOC_CREATE.
  
  **Note**
  The default values, such as document categories, document types and so on, can be configured in Customizing under SAP Customizing Implementation Guide SAP Utilities Prepayment Prepayment Document Settings Define Prepayment Document Default Settings.

- **Change**
  You can make changes to an existing prepayment document. Execute the transaction /PREPAY/DOC_CHANGE.

- **Display**
  You can display an existing prepayment document. Execute the transaction /PREPAY/DOC_DISPLAY.

The following actions can be executed directly from the prepayment main toolbar:

- **Close**
  You can close a prepayment document under various circumstances, as defined by the standard of an energy company, for example, if a customer does not want to continue as a prepayment customer or the
prepayment contract account for a customer is terminated, and so on. You can reopen a closed prepayment document as long as all other prepayment documents for the same contract account are closed and the closed document is not archived. The system allows only one active prepayment document per contract account at any point in time.

If you close a prepayment document, you can later create a new document using the same contract account details if no other prepayment document exists for the same contract account.

When you close a document, the only other option available for the document is Reopen.

- **Reopen**
  You can reopen a closed or inactive prepayment document. This function is called, for example, if the customer account needs to be activated again on prepayment or if final adjustments need to be made on a closed prepayment document. The user can decide up to what date and in which status the document must be kept open.

- **Block**
  You can block a prepayment document under various circumstances, as defined by the standard of an energy company. A blocked prepayment document is not considered in the ABD calculation. Blocking a prepayment document is a temporary action. You can further close a blocked prepayment document too.

- **Unblock**
  You can unblock a blocked prepayment document. This allows the prepayment document to be included during ABD calculation.

- **Status**
  You can define the status of a prepayment document. You can configure whether a prepayment document in a particular status should be considered during account balance determination and event threshold monitoring.

- **Change Moratorium Calendar**
  You can change the moratorium calendar assigned. The moratorium calendar is used to determine the moratorium status on the document. The monitoring events, such as disconnection event, that are configured not to be performed when a moratorium is active, will be suppressed.

- **Change Overdraft Amount**
  You can change the actual overdraft amount which is permitted in case of a negative prepayment balance before a disconnection event will be triggered.

- **Calculation Only**
  You can perform an online calculation to determine the prepayment customer’s up-to-date balance, payment, and usage results. If an ABD calculation is started in online mode the calculation produces the most up-to-date account balance.

- **Calculation and Events**
  In addition to the online calculation, the monitoring is triggered to evaluate the new up-to-date data as well as to raise a configured event as a result.

- **Execute**
  You can execute an event action assigned to a raised event for a particular prepayment document depending on the configuration. You can also configure whether the event action must be executed manually by choosing the Execute pushbutton or whether it is automatically executed. This option is unavailable if the action must be executed automatically.

The following actions can be executed on the debt recovery tab page:

- **Activate Debt Recovery**
  You can choose either percentage-based or daily value-based for debt recovery. In addition, the debt recovery start date and either the percentage or the daily value must be entered. If no specific open items are selected and marked as original debt, all open items will be marked as original debt items by default.

- **Deactivate Debt Recovery**
To change the original debt items or the daily value, debt recovery must be deactivated before it can be activated again with the new selection.

- Select OP
  Before debt recovery is activated you can select and mark manually the open items which should be treated as original debt items, so that they are not get cleared automatically.

- Explain
  Once debt recovery is activated, the original debt items can only be displayed.
3 Account Balance Determination

Use

You can determine the account balance, payments, and usage of a prepayment customer. Customers enrolled in the prepayment program are responsible for maintaining a positive prepayment balance in their account. Utility companies therefore need to have the most current account balance information at hand.

The prepayment balance is composed of the following factors:

- **Negative:** Usage amounts based on meter readings, which depend on energy prices, taxes, and so on (smart meter or non-smart meter)
- **Positive:** Payments to the account (charges are negative)

The above items are used to calculate the balance of a prepayment account.

Account balance determination is possible for every individual prepayment document in online calculation mode.

Furthermore, the application also provides a report (which might be scheduled as background job) for mass account balance determination of multiple prepayment documents.

An ABD strategy defines the details of the account balance determination. You can customize the ABD strategy to determine how the usage, the relevant payments, and the resulting balance is calculated. Each prepayment document is created with a specific ABD strategy.

Prerequisites

- You have the necessary authorization to perform backend functionalities.
- You have made the required settings for Account Balance Determination in Customizing under [SAP Customizing Implementation Guide > SAP Utilities > Prepayment > Account Balance Determination Settings]

Features

- You can calculate the account balance. For more information, see Calculating Account Balance [page 10]

ABD also consists of an ABD strategy. Each prepayment document must be created with an ABD strategy. An ABD strategy lets you customize how the usage, the relevant payments, and the resulting balance is calculated. You can assign the following to a given ABD strategy:

- Usage Provider Class
● Payment Provider Class
● ABD Provider Class

The ABD strategy is flexible and allows you to enhance or exchange parts of the ABD calculation.

More Information

● Calculating Account Balance [page 10]

3.1 Calculating Account Balance

Use

You can determine the latest usage, payment, and account balance details of a prepayment customer.

Prerequisites

You have defined a usage provider class, a payment provider class, and a balance provider class for the referred ABD strategy in the prepayment document.

Procedure

1. Execute transaction /PREPAY/ABD_CALCULATE
2. Enter the required details in the Selection Criteria group box
3. Select the Calculation Parameters, for example, Calculate Usage, Calculate Payment, and Calculate Account Balance.
4. Choose 

You can view the latest results on the Prepayment for Utilities 1.0 user interface.
Result

When you select Calculate Usage, the negative part of the account balance is determined. The application calculates the consumption and the amount to be invoiced, based on this consumption per time slice. The usage result shall include information about:

- Usage quantity (consumption)
- Usage amount (amount to be invoiced)

When you select Calculate Payment, the FI-CA postings part (which includes the positive payments) of the account balance is determined. The application calculates the payments based on an open item analysis per time slice.

The payment result includes the following information:

- Payment amount affecting the actual balance (immediately)
- Payment amount affecting the grace balance (after the configured grace period)

When you select Calculate Account Balance, the latest usage amounts are deducted from the actual account balance and the latest payment results are added.

The Account Balance result includes the following information:

- Actual account balance
- Average daily usage
- Remaining days on prepayment document
- Current debt
- Open debt
- Open debt due

The Data Records produced by the calculation contain the following columns:

- **Source**: Data record types are identified by the following indicators in this column:
  - = (Balance Data Record)
  - - (Usage Simulation Data Record; this is for each contract)
  - + (Aggregated Open FI-CA Items; this is not shown if a balance data record exists for the same time period)
- **Calculation To Date**: End of the calculation period
- **Calculation From Date**: Start of the calculation period
- **Run Version**: Version number of the mass calculation run
- **Result Type**:
  1. Completed data without usage simulation results
  2. Current data with simulation results
- **Currency**: Calculation currency identical with prepayment document currency
- **Usage Unit of Measurement**: Unit of measurement for usage quantity simulation results
- **Daily Usage Quantity**: Calculated using the following formula:
  \[ \text{Average Usage Quantity} = \frac{\text{Usage Quantity}}{\text{Days in Calculation Period}} \]
- **Daily Usage Amount**: Calculated using the following formula:
  \[ \text{Average Usage Amount} = \frac{\text{Usage Amount}}{\text{Days in Calculation Period}} \]
- **Remaining Days**: Calculated using the following formula:
  \[ \text{Remaining Days} = \frac{(\text{Current Energy Balance} + \text{Overdraft Amount})}{(\text{Daily Usage Amount} + \text{Daily Debt Recovery Amount})} \]
• **Energy Payment**: Calculated using the following formula:
  ○ *Energy Payment = Available Credit - Debt Due*

• **Current Debt**: Calculated using the following formula:
  ○ *Current Debt = Actual Debt Amount - Debt Due*

• **Debt Due**: Calculated using the following formula:
  ○ *Debt Due = Daily Debt Recovery Amount * Days passed Debt Recovery Activation*

**Note**
Debt due is used only in daily debt recovery.

• **Open Debt Due**: Calculated using the following formula (only when the available energy payment is less than the debt due amount):
  ○ *Open Debt Due = Debt Due - Energy Payment*

**Note**
Open debt due is used only in daily debt recovery.

• **Usage Quantity**: Result of usage simulation
• **Usage Amount**: Result of usage simulation
• **Credits per Period**: All open positive Fi-CA items (payments)
• **Energy Payments per Period**: All open positive Fi-CA items minus receivables not marked as original debt
• **Actual Debt Payment Amount**: Amount of original debt items yet to be cleared
• **Last Payment Date**: Dated of last Fi-CA payment item

### 3.1.1 Time Slices

**Context**

Each time a calculation is performed, the data records will be created for the following time slices:

1. **Past Records up to 1 day before Calculation Start Date**
   Only open Fi-CA items on the current contract account from the past are shown in the balance data record.

2. **Calculation Start Date - End of Billing Period Date**
   This time slice will only be created if all contracts have been billed already. If more than one active contract is assigned to the contract account, the smallest end of billing period date will be used. Only open Fi-CA items on the current contract account from the past are shown in the balance data record.

3. **Previous Data Record Date To Date - Today or Calculation Date**
   Only for this time slice the usage simulation is performed for the time period a contract has not been billed yet. Open Fi-CA items on the current contract will be shown in the balance data record.
**Note**

The calculation start date is determined when the prepayment document is created according to the following logic:

- Either the contract move-in date or the end of billing period date, if existing
- If more than one active contract is assigned to the contract account, the smallest move-in date or end of billing period date will be used.
4 Threshold Monitoring

Definition

The application offers the possibility to perform flexible monitoring checks and to raise events, for example, a communication event to remind the customer to pay in advance for their energy consumption or a disconnect event that could eventually disconnect the customer from the energy supply.

Use

Each of the configurable thresholds that must be monitored is defined by the following:

- **Monitoring Group**
  Can be assigned to document category and document type to select only the applicable monitoring types per prepayment document.

- **Monitoring Type**
  Defines what kind of monitoring check should be performed, for example, notification, disconnection or reconnection.

- **Moratorium Check**
  When active, this monitoring check must not be executed if the moratorium calendar, to which the prepayment document is assigned, defines the actual date as a moratorium date.

- **Account Balance Monitoring Class**
  Implements the check logic when the event of a particular type is raised. All monitoring threshold types to be monitored must be assigned to a given account balance strategy. In case the value to be monitored falls below the configured threshold, an event of the assigned event type is raised.

- **Threshold Value**
- **Assigned Event Type**

Structure

You can monitor a prepayment document by performing the following:

- Raise an event
- Assign a status
- Assign an action to the event

More Information

Monitoring of Prepayment Document [page 15]
4.1 Monitoring of Prepayment Document

Use

You can perform flexible monitoring checks by raising an event, assigning statuses, and assigning relevant actions to each event type.

Prerequisites

- You have the necessary authorization to perform backend functionalities.
- You have made the required settings in Customizing under SAP Customizing Implementation Guide ➤ SAP Utilities ➤ Prepayment ➤ Threshold Monitoring Settings.

Features

- Raise an event
  The application provides the following event types by default
  - Communication Event: If the remaining number of days is less than seven days, a communication event shall be raised.
  - Disconnection Event: If the actual balance turns negative, a disconnection event shall be raised.
  - Reconnection Event: If the actual balance turns positive and the status is disconnected, a reconnection event shall be raised.
  You can view the raised events in the Prepayment for Utilities 1.0 user interface.

- Assign a status
  When an event is raised, the system automatically sets the status of the prepayment document to the status value that is assigned to the respective event type in the Customizing activity Define Prepayment Monitoring Types.

- Assign an action to the event
  You can also assign an action to an event type in the Customizing activity Define Prepayment Document Actions.
  A particular action is assigned to each event type that is raised for a prepayment document. Once the event is raised, the agent can choose the Execute pushbutton and trigger the action on the Prepayment for Utilities 1.0 user interface. You can also configure the event type so that the assigned action is executed automatically.
  Once an action for a prepayment document is triggered, the status changes automatically. You cannot execute the same prepayment document twice.
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