727097 - ALLOCATIONS: Rounding differences

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Language	English	**Master Language**	German
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Component	CO-OM-CCA-F (Period-end Closing)		

Please find the original document at **https://launchpad.support.sap.com/#/notes/ 727097**

Symptom

1. After you execute an iterative cycle, you notice that a small amount remains for some senders. This amount can be either positive or negative. If the controlling area currency is euro, for example, the amount is a few cents.

2. After you execute a cycle, a receiver is assigned a rounding difference. It is unclear which receiver is assigned the rounding difference.

Other Terms

Transactions: KSU5, KSUB, KSV5, KSVB, KSW5, KSWB, KSC5, KSCB, GA15, GA35, 3KE5, 4KE5, GJG5, GJF5
Program: ALxxyyyR, rounding difference, sender credit, sender overcredit

Reason and Prerequisites

There are small amounts for senders.

These small amounts, which remain for some senders, cannot always be avoided for the following reasons:

In iterative cycles, the sender-receiver network is loaded into the iteration processor together with all sender amounts and the receiver tracing factors. The iteration processor then calculates the additional amounts that a sender (which is also a receiver) has to distribute. The rounding logic used here for each calculation is purely mathematical.

The senders distribute amounts to the receivers after the iteration processor has been processed. Before they distribute the amounts, the system adds the amounts from the iteration processor to the amounts that were found for the sender in the database. A sender then distributes the total amount to its receivers. If rounding differences occur, they have to be passed on to one of the receivers. If possible, business aspects are taken into account here: A receiver that is also a sender, or a receiver with a receiver tracing factor of zero, should not receive a rounding difference.

However, these rounding differences, which may occur if the sender distributes the amounts, are not known to the iteration processor. As a result, a sender may not be credited completely.

Example:
An iterative cycle has several segments. Three of these segments are defined as follows: (The currency is euro.)

1. Segment A: Cost center (CCtr) C1 receives 1.00 euro from the database and

distributes it to CCtrs C2 and C3 (receiver tracing factor 50% in each case).

2. Segment B: CCtr C4 receives 1.01 euro from the database and distributes it to CCtrs C1 and C5 (receiver tracing factor 50% in each case).

3. Segment C: CCtr C5 receives 1.00 euro from the database and distributes it to CCtr C6 (receiver tracing factor 100%).

The iteration calculates that CCtrs C1 and C5 - as receivers of segment B - receive 0.51 each (mathematical rounding: 1.01*50/100 = 0.505, rounded to 0.51 euro).
After the iteration, the senders of the three segments make the following distribution:

1. Segment A: CCtr C1 has 1.00 euro from the database and receives 0.51 euro from the iteration. Therefore, 50% of 1.51 is distributed to CCtrs C2 and C3 each. CCtr C2 receives 0.76 (0.75 + 0.01 rounding difference), CCtr C3 receives 0.75.

2. Segment B: CCtr C4 has 1.01 from the database. CCtr C1 receives 0.51 (mathematical rounding). CCtr C5 receives 0.50 (0.51 (mathematical rounding) - 0.01 (rounding difference of the cycle)). CCtr C5 receives the rounding difference because CCtr C1 is also a sender in segment A.

3. Segment C: CCtr C5 has 1.00 euro from the database and receives 0.51 euro from the iteration. Therefore, 100% of 1.51 euro is distributed to CCtr C6.

CCtr C5 shows the following situation:

Debit (from the database): 1.00 euro
Debit (as a receiver of segment B): 0.50 euro
Credit (1.00 euro DB + 0.51 euro iteration): -1.51 euro

Therefore, CCtr C5 is overcredited by 0.01 euro.

Rounding difference for a receiver

A distinction must be made between two cases:

1. The system rounds to two decimal places internally in accordance with the usual rounding logic (currency is euro, for example). No rounding difference remains for which the program must explicitly search for a receiver.

Example:

Sender S1 allocates 1. 01 EUR to the receivers R1, R2 and R3. The receiver tracing factors are planned costs:

Receiver Amount
R1 250 EUR
R2 500 EUR
R3 250 EUR

The allocation is made as follows:

R1: 1.01*250/1000 = 0.25 EUR
R2: 1.01*500/1000 = 0.51 EUR
R3: 1.01*250/1000 = 0.25 EUR

Receiver R2 received a rounding difference in accordance with the usual rounding

logic. If you add the receiver amounts, you receive the exact sender amount to be allocated.

The rounding difference can apply for each receiver that has a tracing factor not equal to zero. However, this rounding difference case occurs only rarely. This applies to both cumulative and non-cumulative cycles.

2. The system rounds to two decimal places internally in accordance with the usual rounding logic (currency is euro, for example). A rounding difference remains for which the program must explicitly search for a receiver.

a) Example 1:

Sender S1 allocates 1 EUR to the receivers R1, R2 and R3. The receiver tracing factors are planned costs:

Receiver Amount
R1 250 EUR
R2 250 EUR
R3 250 EUR

The allocation is made as follows:

R1: 1*250/750 = 0.33 EUR
R2: 1*250/750 = 0.33 EUR
R3: 1*250/750 = 0.33 EUR

A rounding difference of 0.01 EUR remains, which must be allocated to a receiver. This rounding difference is distributed in non-cumulative cycles as follows:

- The receiver that is last in alphanumeric sequence receives the rounding difference if its tracing factor does not equal zero and if it is not a sender in another segment of the cycle.
- If the last receiver does not fulfill these conditions, the system searches for the first receiver to fulfill these conditions.
- If none of the receivers fulfills the two conditions, the last receiver is assigned the rounding difference.
- In cumulative cycles, the rounding difference is always assigned to the alphanumerically last receiver (see Note 742094).

a) Example 2:

Sender S1 allocates 1.01 EUR to the receivers R1, R2 and R3. The receiver tracing factors are planned costs:

Receiver Amount
R1 250 EUR
R2 250 EUR
R3 250 EUR

The allocation is made as follows:

R1: 1*250/750 = 0.34 EUR
R2: 1*250/750 = 0.34 EUR
R3: 1*250/750 = 0.34 EUR

At first, the amount allocated is too high, that is 1.02 EUR. A negative

rounding difference of -0.01 EUR remains, which is allocated to a receiver as described above.

Solution

If the sender cost centers are to be credited completely, the only option is to define an additional cycle that clears these small amounts.
This cycle should not be started until all other cycles have been executed.

Other Components

Component	Description
CO-PA	Profitability Analysis
CA-JVA	Joint Venture and Production Sharing Accounting

This document refers to

SAP Note/KBA	Title
742094	ALLOCATION: Receiver w/ 0 tracing factor gets rounding diff.

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