Payment Data Engineering and Duplicate Event Reconciliation

$887

posted once from nine payment events that summed to $1,456. Two exact replays ($324) were suppressed and one conflicting event ($245) was held.

9 to 6	64%	$324	$20
events reduced to payment IDs	overstatement without replay control	in exact replays suppressed	at stake in the one open dispute

EXHIBIT 1

From raw events to the posted ledger



$1,456 in, $324 of retries out, $245 held, $887 posted.

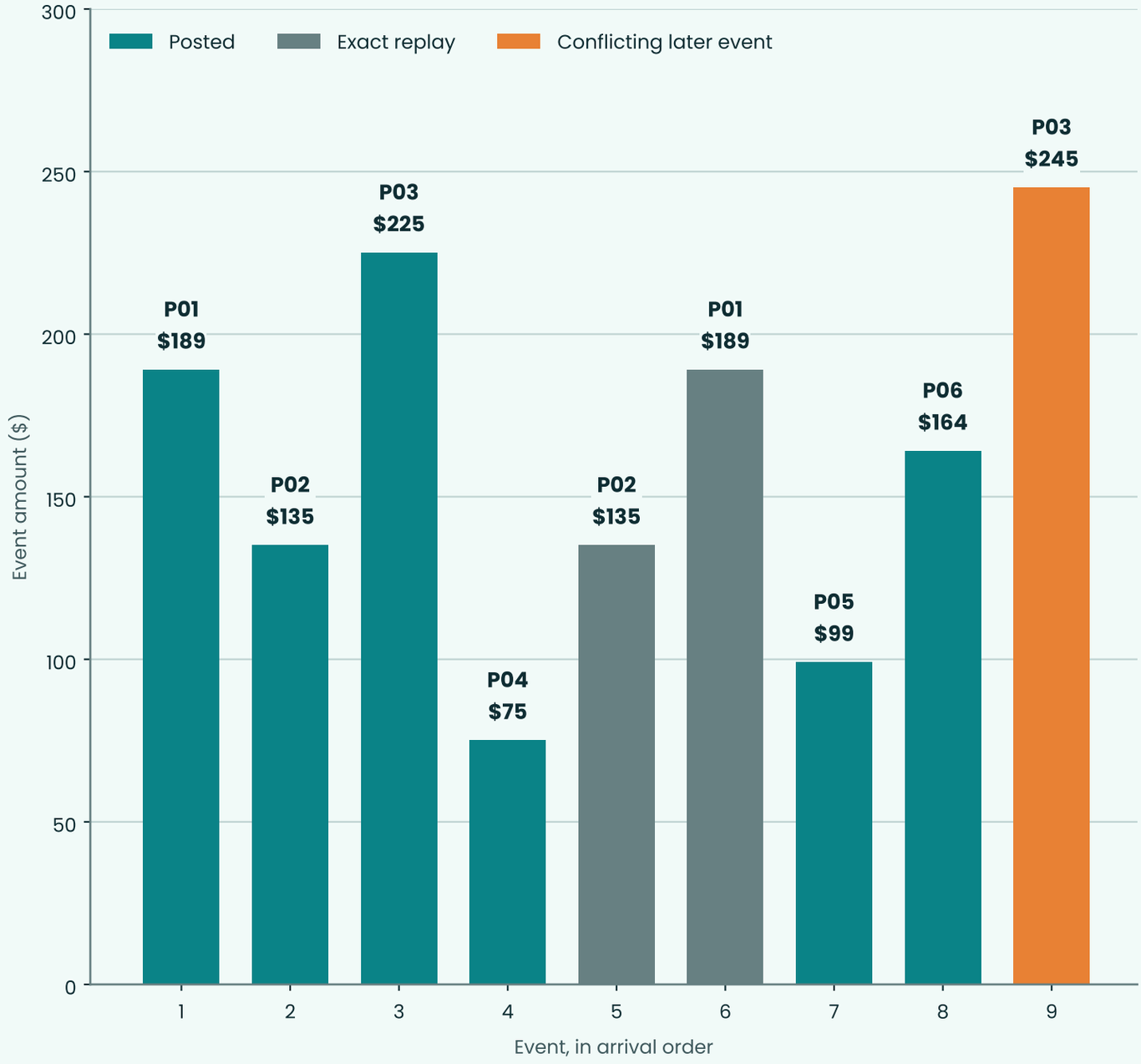
Worked payment ledger · nine events representing six payment IDs · amounts in integer cents

What the analysis shows

- Nine events carried six payment IDs. Posting each ID once gives $887; summing every event gives $1,456, an overstatement of 64%.
- Two events were byte-identical retries of P02 ($135) and P01 ($189). They are suppressed, not posted: $324.
- One event reused P03 with a different amount, $245 against the first-seen $225. It is neither a retry nor a new payment, so it is quarantined.
- The provisional ledger total is therefore $887, and the final total will be either $887 or $907 depending on which P03 amount the source confirms: a $20 question.
- Every dollar is accounted for: $887 posted + $324 replays + $245 held = $1,456 received.

EXHIBIT 2

All nine events in arrival order

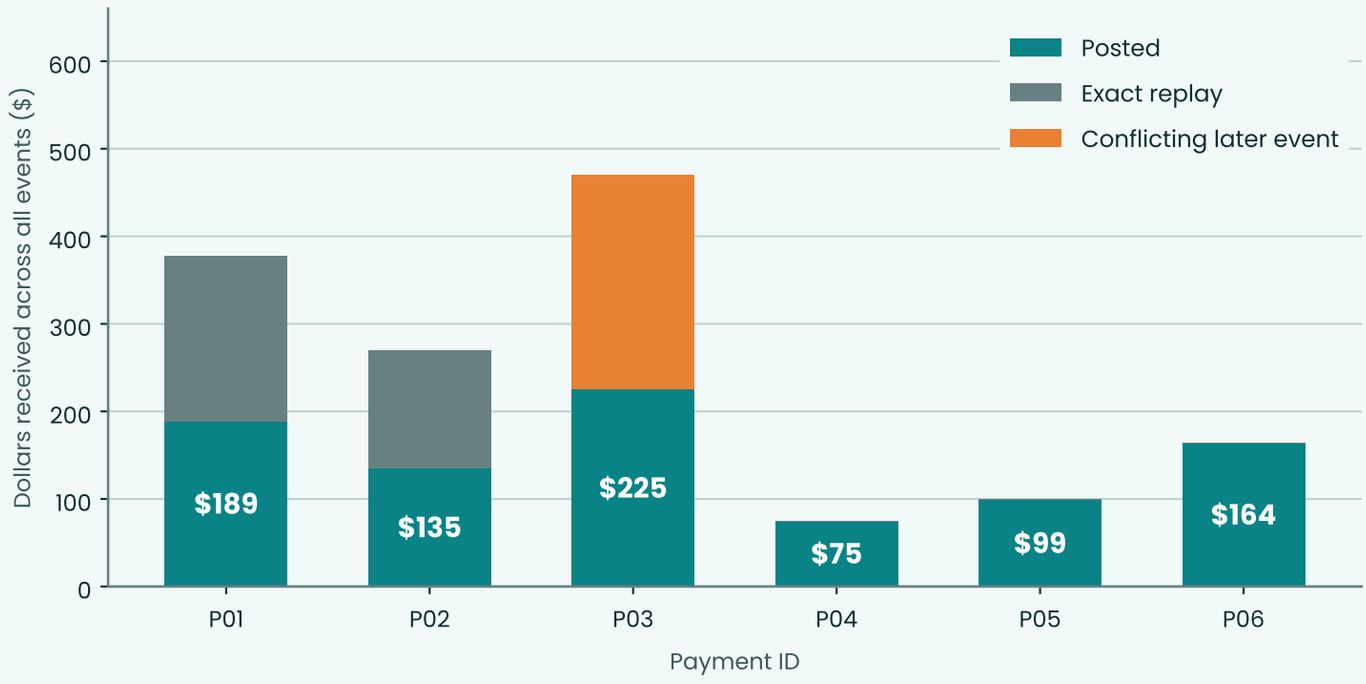


Teal marks posted payments, gray marks exact replays and orange marks a conflicting later event.

Inside the numbers

EXHIBIT 3

Each payment ID across its events



P01 and P02 arrived twice with the same amount; P03 arrived twice with different amounts.

EXHIBIT 4

Range of the final total



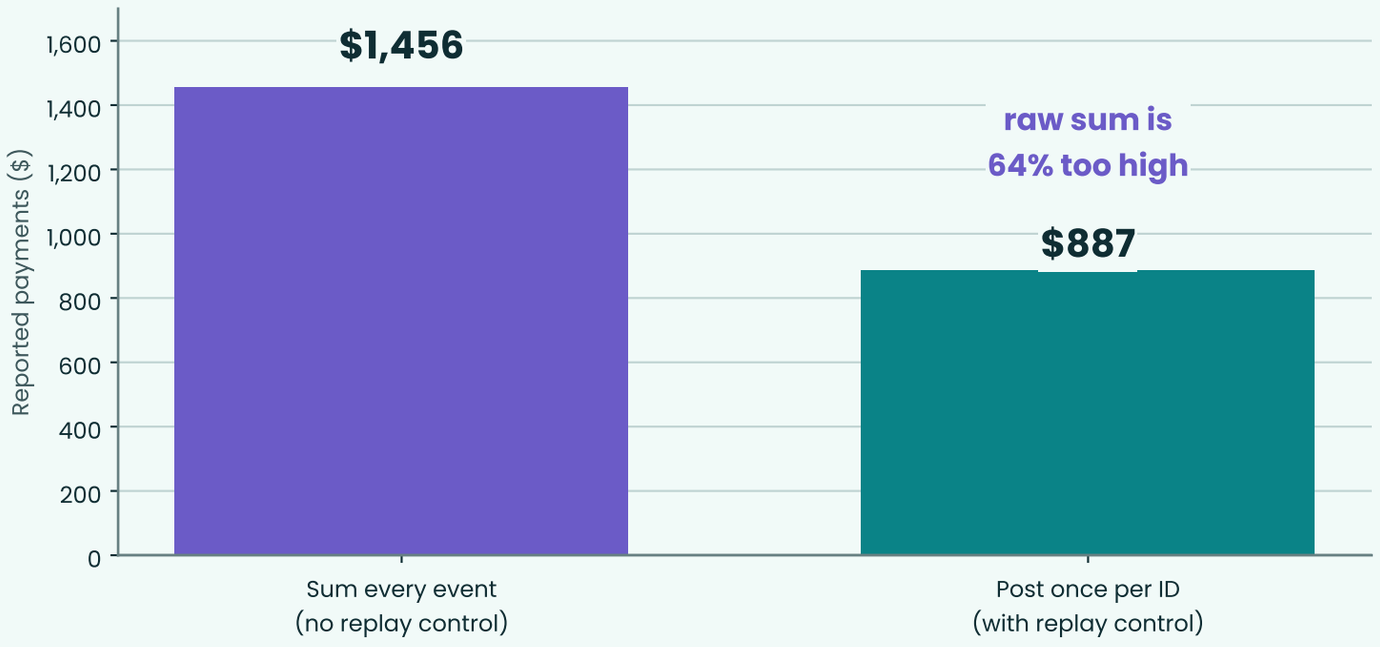
The dispute moves the total by $20, 2.3% of the posted amount.

Worked payment ledger · nine events representing six payment IDs · amounts in integer cents

What changes the answer

EXHIBIT 5

What replay control prevents



Summing raw events reports $569 more than the provisional ledger, or $549 more if the later P03 amount is the one confirmed.

EXHIBIT 6

Replay trace

Event	Payment ID	Cents	Amount	Decision
1	P01	18,900	$189.00	Post
2	P02	13,500	$135.00	Post
3	P03	22,500	$225.00	Post
4	P04	7,500	$75.00	Post
5	P02	13,500	$135.00	Replay
6	P01	18,900	$189.00	Replay
7	P05	9,900	$99.00	Post
8	P06	16,400	$164.00	Post
9	P03	24,500	$245.00	Amount conflict

Amounts are compared in integer cents, so no rounding can hide a mismatch.

How it was built and how far it goes

RECOMMENDED USE

- Approve $887 as provisional and resolve P03 against the source system before close.
- Keep quarantine for same-ID, different-amount events; never auto-pick an amount.
- Alert when replays exceed a set share of events; two of nine here is already 22%.

METHOD

- Events are keyed by payment ID and processed in arrival order; the first event for an ID is posted.
- A later event with the same ID and the same cents is an exact replay and is suppressed.
- A later event with the same ID and different cents is an amount conflict and is held for review.

LIMITS

- Nine worked events; the logic is exact but the rates are not production estimates.
- First-seen is a provisional choice, not evidence that the first amount is right.
- Assumes payment IDs are stable and unique at the source.

NUMBERS RECONCILED

Quantity	Value	How it was checked
Raw event sum	$1,456.00	sum of nine events in cents
Posted once	$887.00	189 + 135 + 225 + 75 + 99 + 164
Exact replays	$324.00	135 + 189
Amount conflict	$245.00	second P03 event
Identity	$1,456	887 + 324 + 245