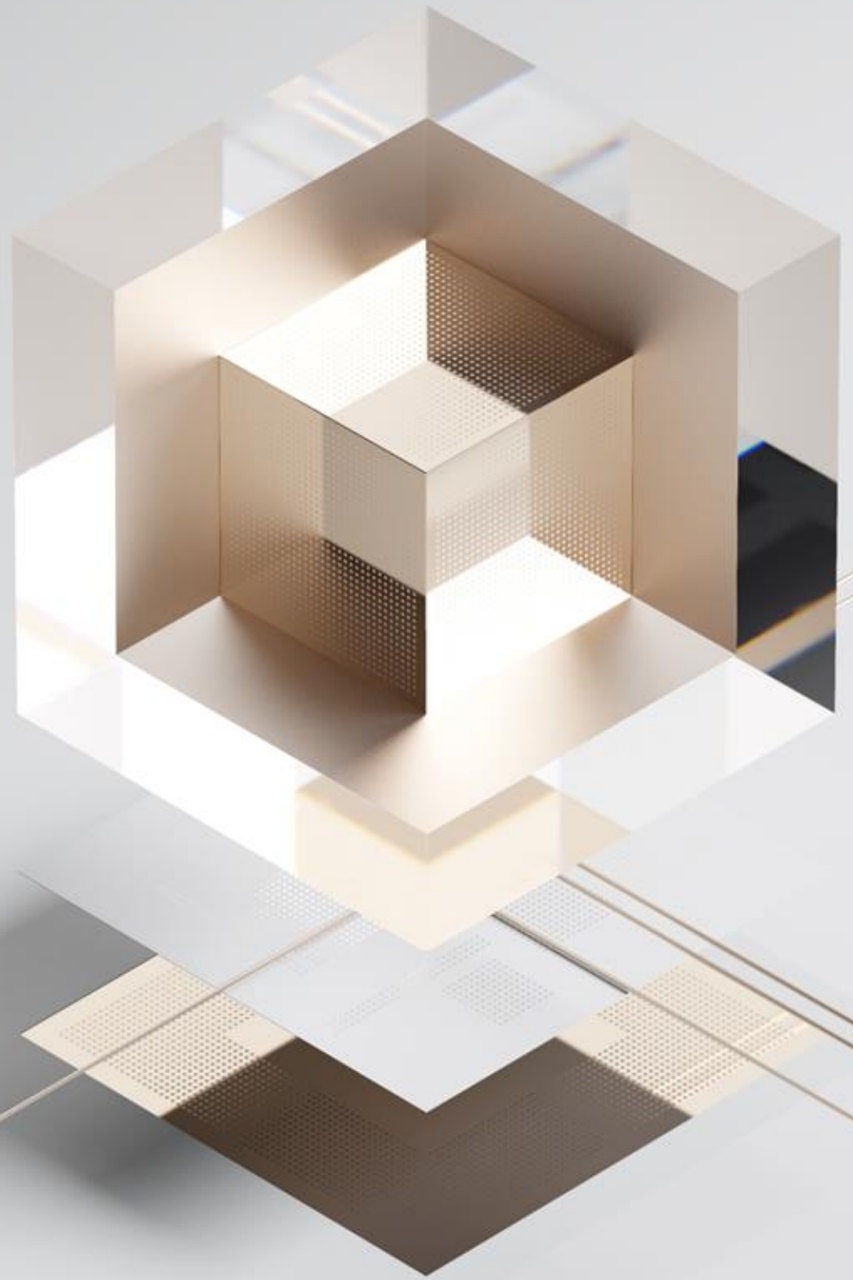
March 6, 2026

Root Cause Analysis and Mitigation Plan



Agenda

Incident summary

Incident impact

Root cause analysis

Incident timeline

Piano solutions

Summary

Incident date

Mar 06, 2026

Affected software modules

Activation (VX webhooks)

Affected environment or location

US

Incident scope

Partial outage

Incident duration

131 minutes (11:20 UTC – 13:31 UTC)

Impact

Incident severity

Major

Impact description

Clients stopped receiving new webhook events. 131 minutes of webhook data was lost.

Root cause

On March 6, 2026, between approximately 11:20 UTC and 13:31 UTC, webhook deliveries experienced failures due to a database limitation that caused webhook events to reference incorrect notification data.

The system reached the maximum value limit for ID numbers in our webhook events table (approximately 2.1 billion). When new notifications were created with IDs exceeding this limit, the database was unable to store the complete number and automatically rounded down each new ID to the maximum allowable value.

This resulted in all newly created webhook events incorrectly pointing to the same single notification record rather than their intended notifications. Consequently, webhook deliveries failed because the system attempted to build payloads using mismatched notification data that lacked the required information for proper delivery.

Piano implemented the following corrective measures:

- **Database Schema Update**: Created a new `webhook_event` table with the `notification_id` column properly defined as `BIGINT` to accommodate larger ID values
- **Service Restoration**: Performed an atomic table rename operation to replace the problematic table with the corrected version, minimizing service disruption
- **Sequence Continuity**: Configured the `AUTO_INCREMENT` setting on the new table to maintain proper ID sequencing
- **Data Preservation**: Migrated March pre-incident webhook history from the original table to ensure no historical pre-incident data was lost

To prevent similar issues, Piano is conducting a comprehensive audit of all foreign key columns that reference numeric primary keys throughout our database schema. This review will ensure consistent data types across all related tables and identify any other potential limitations before they impact service.

Incident timeline

Minutes	Date / Time (UTC)	Description
0	2026-03-06 11:20	Database reaches maximum ID limit, causing new webhook events to reference incorrect notification data
34	11:54	Piano engineering team identifies the root cause and begins evaluating repair options
55	12:15	Initial repair approach estimated to require 3+ hours; team pivots to faster table replacement strategy
85	12:45	Client support ticket received reporting webhook failures
120	13:20	Table replacement solution finalized and implementation begins
131	13:31	New database table deployed via atomic replacement, restoring normal webhook processing
135	13:35	Verification completed: Webhook deliveries confirmed working correctly
190	14:30	Historical data migration completed to preserve March webhook records

Piano solutions and corrective measures

Schema type audit

Review all foreign key columns across the database to identify any remaining mismatch of types

Status

Done

Estimated delivery date

Mar 06, 2026

Generate a file with metadata of permanently lost webhooks within applications

Status

Done

Estimated delivery date

Mar 16, 2026

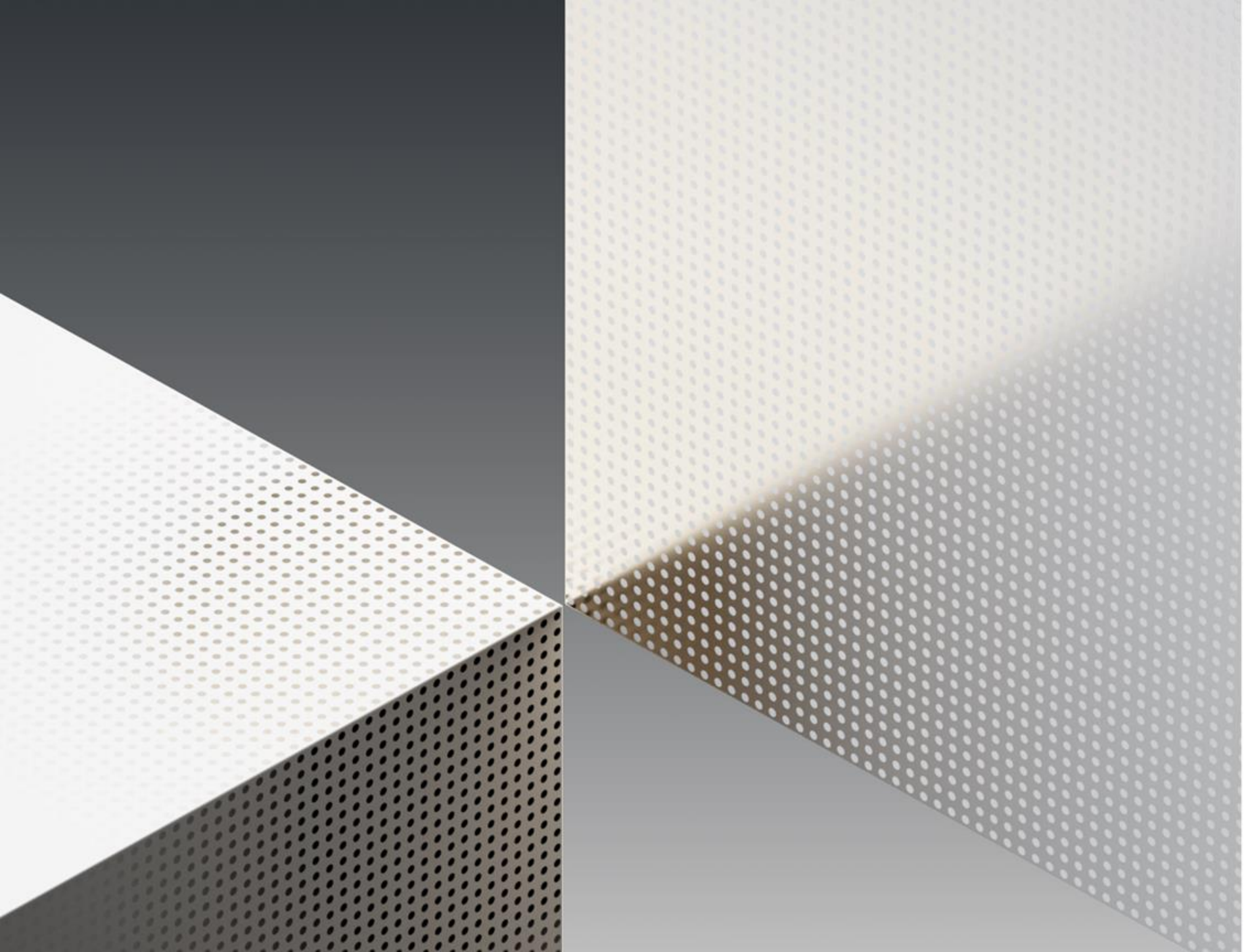
Apply equivalent database improvements to all other environments

Status

In progress

Estimated delivery date

Mar 31, 2026



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ANALYTICS + ACTIVATION

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