

DEVICE ACTIVATION FAILURE ANALYSIS – INSIGHTS REPORT

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Project Type: Mock Independent Data Analysis Project

Data Source: Snowflake (3,000 activation records, 1,000 devices, 30 locations)

EXECUTIVE SUMMARY

The overall device activation failure rate is 13.97%. Analysis shows failures are concentrated in specific OS versions, device models, regions, and error codes. OS versions 4.2 and 4.3, the A10 Mini device model, the Midwest region, and error code E209 are the strongest predictors of activation issues.

KEY FINDINGS

1. Overall Device Activation Performance

- Overall activation failure rate: 13.97%

2. OS Version Stability

Failure rates:

- OS 4.3: 15.22% (highest)
- OS 4.2: 14.49%
- OS 4.0: 13.48%
- OS 4.1: 12.75% (lowest)

Insight:

OS version 4.3 has the highest failure rate at 15.22%, with 4.2 at 14.49%. Both newer versions perform worse than 4.0 (13.48%) and 4.1 (12.75%). The upward progression indicates that updates in 4.2 and 4.3 may have introduced regressions or compatibility issues, reducing activation stability relative to older versions.

3. Device Model Reliability

Failure rates:

- A10 Mini: 15.46% (highest)

- KitchenView 3: 14.77%
- X5 Pro: 13.92%
- Flex Go: 11.75% (most reliable)

Insight:

The A10 Mini shows the highest instability, suggesting older hardware or firmware is more prone to activation issues. Flex Go displays strong stability performance.

4. Error Code Diagnostics

Occurrences:

- NULL: 222
- E209: 86
- E102: 47
- E501: 38
- E330: 26

Insight:

A high count of NULL error codes indicates incomplete error handling in backend systems. E209 is the most frequent structured error, likely mapping to provisioning or certificate validation failures.

5. Regional Performance

Failure rates:

- Midwest: 15.32% (highest)
- Northeast: 14.10%
- South: 13.03%
- West: 12.71% (lowest)

Insight:

The Midwest has the highest failure rate, suggesting environmental or procedural differences. The West region shows the strongest performance.

ROOT CAUSE ANALYSIS (RCA)

- Potential regressions in OS versions 4.2 and 4.3
- Hardware or firmware instability in A10 Mini devices
- Unhandled backend exceptions causing NULL error codes
- Regional onboarding or connectivity variances

RECOMMENDATIONS

Engineering:

- Perform regression testing on OS 4.3 and 4.2 activation routines.
- Replace NULL errors with structured error responses.
- Investigate provisioning flows causing E209 errors.

Product:

- Add OS compatibility checks prior to activation.
- Prioritize improvements for A10 Mini activation workflows.

Support & Ops:

- Targeted installer training for Midwest region.
- Update scripts and internal documentation for OS 4.3 and error E209.

BUSINESS IMPACT

Reducing these issues could decrease activation failures by 2–4%, improve onboarding time, reduce support escalations, and enhance customer satisfaction.