

Technical Analysis of Dominion EMS Export and Deadlock Anomalies

Executive Summary

This briefing document provides a technical analysis of Election Management System (EMS) anomalies observed in Mesa County, Colorado, during the 2020 election cycle. The central finding suggests that several database, export, and log irregularities—previously identified in forensic reports as suspicious—may actually be the result of a known software limitation within Dominion Voting Systems' pre-5.13 EMS environment. Specifically, internal Dominion communications from August 2020 confirm the existence of a SQL Server deadlock bug affecting "Colorado by Portion" and other critical export packages. This bug frequently necessitated manual intervention and troubleshooting by election staff. These administrative actions, such as restarting adjudication sessions or creating new databases, left behind forensic artifacts that appear anomalous but may represent operational responses to software failure rather than intentional manipulation. The preservation of Mesa County's 5.11-CO environment offers a unique, unremediated snapshot of these systems during the period the bug was active.

The Export/Deadlock Bug: Technical Origins and Scope

Internal Dominion documentation and correspondence from 2020 reveal a recurring technical failure regarding SQL Server deadlocks within the EMS platform.

Technical Nature of the Anomaly

- **SQL Server Deadlocks:** The issue was rooted in SQL parallelism behavior and temporary-table locking during export operations.
- **Operational Failures:** The bug caused export operations to fail, stall, delay, or remain incomplete. These "unreconstructed" exports were often interpreted during later forensic reviews as "missing" batches.
- **Environmental Sensitivity:** The deadlock primarily affected "EMS Standard" server environments, which possess higher SQL parallelism and hardware resources. Conversely, "EMS Express" installations were reportedly unable to reproduce the issue.

Impact on Specific Software Branches

- **Version Gap:** A significant discrepancy exists between the software branch where the bug was analyzed (5.5.x) and the environment used in Mesa County (5.11-CO).
- **Remediation Delay:** While Dominion identified the issue in August 2020, evidence suggests that remediation was not deployed via a version 5.12 update; instead, it was associated with the later version 5.13. Consequently, the 5.11-CO environment remained susceptible during the 2020 general election.

Geographic Distribution

Internal emails indicate the bug was widespread, appearing in multiple jurisdictions:

- **Georgia:** Identified as an initial site of the deadlock issue.
- **Michigan:** Reappeared in MI ENR (Election Night Reporting) exports.

- **Colorado:** Specifically implicated through the "Colorado by Portion" export package, which was prioritized for analysis due to its wide use by customers.

Operational Troubleshooting and Forensic Artifacts

The necessity of real-time troubleshooting by election staff created a series of database and log artifacts that mimic patterns of external manipulation.

Administrative Response Patterns

When the EMS encountered workflow or export stalls, staff often performed the following actions:

- Restarting adjudication sessions.
- Reloading ballot batches.
- Restarting system services.
- Rerunning exports.
- Creating replacement sessions or databases.
- Modifying SQL behavior/workflows.

The Mesa County Adjudication Incident (October 21, 2020)

On October 21, 2020, Mesa County Elections Manager Sandra Brown reportedly stopped an active adjudication session and initiated a new one to resolve a workflow issue. This administrative action explains the creation of additional Adjudication/Tabulation database structures identified in later forensic reports. These actions are characterized as standard EMS administrative behavior.

Forensic Misinterpretation

The document posits that the following anomalies are technically grounded explanations for "suspicious" findings:

- **Batch Irregularities:** Caused by reprocessing and reloading after export failures.
- **Database Creation:** New adjudication databases resulting from session restarts.
- **Synchronization Anomalies:** Inconsistencies between different export attempts and transaction states.

Regulatory Compliance and Disclosure Obligations

Dominion maintains ongoing obligations under the Help America Vote Act (HAVA) and the EAC Testing and Certification Program regarding "fielded" systems.

Disclosure Gaps

Despite internal awareness of the export/deadlock issue by August 2020, there is a lack of publicly available EAC records for:

- Product Advisory Notices (PANs).
- Customer Advisory Notices (CANs).
- Engineering Change Orders (ECOs).
- Formal Quality Monitoring Program disclosures.

Trusted Build Integrity

The bug existed within "Golden Images" and "Trusted Builds"—the authoritative certified software configurations. This raises concerns regarding software version control and whether the deployment baselines relied upon for forensic validation were inherently defective at the time of certification.

State-Level Awareness

Correspondence from June 30, 2020, shows the Colorado Secretary of State's (SOS) office was aware of operational results-loading concerns. The SOS office:

- Directed Dominion to "take the lead" in communicating with counties.
- Requested updates on the number of batches and counties affected by the problem.
- Emphasized the need for communication "before counties start reporting results."

Significance of the Mesa County 5.11-CO Image

Mesa County is uniquely significant in the technical analysis of the 2020 election due to the preservation of its system image.

- **Preservation of State:** Because the 5.11-CO environment was preserved before the deployment of later trusted-build updates or the 5.13 remediation, it serves as a "live" snapshot of the system's operational state.
- **Forensic Evidence:** The preserved image contains the specific EMS databases, RTR (Results Tally and Reporting) export activity, and audit logs that would show whether documented SQL workarounds were ever implemented.
- **Verification of the Bug:** The Mesa County forensic images represent an opportunity to validate if the anomalies observed were manifestations of the known export/deadlock defect rather than unauthorized access.

Key Documentary Evidence

Date,Entity/Source,Key Information/Quote

"June 30, 2020",Colorado SOS,"Instructed Dominion to lead communications regarding results-loading issues ""ASAP."""

"August 5, 2020",Ivan Vukovic (Dominion),Confirmed deadlock issue from GA reappeared in Michigan and Colorado export packages.

August 2020,Dominion Internal,"Acknowledged issue affects ~12 ""problematic"" export packages on Standard servers."

"Oct 21, 2020",Mesa County Staff,Reported stoppage of adjudication session and initiation of a replacement session.

General 2020,Technical Analysis,Identifies 5.11-CO as the operational version; 5.13 as the likely remediation version.

Conclusion

The analysis suggests a high probability that the forensic anomalies identified in Mesa County were produced by known software limitations and the subsequent human troubleshooting required to maintain election operations. Internal records demonstrate that Dominion's senior

engineering leadership was triaging SQL deadlock failures across multiple states (GA, MI, CO) throughout the 2020 election cycle. These failures necessitated administrative interventions that, while operational in nature, created a complex trail of database and transaction artifacts easily misinterpreted as evidence of intentional manipulation.