

<p>DISTRICT COURT, CITY AND COUNTY OF DENVER, COLORADO 1437 Bannock St. Denver CO 80202</p>	<p>DATE FILED: November 19, 2021 10:14 PM FILING ID: A3D9A19A24908 CASE NUMBER: 2021CV33691</p>
<p>Plaintiffs: Ron Hanks, Amy Mitchell, Gary Moyer, Jeff Rector, Merlin Klotz, individually and as Clerk and Recorder for Douglas County, Colorado, and Dallas Schroeder, individually and as Clerk and Recorder for Elbert County</p>	
<p>v.</p> <p>Defendant: JENA GRISWOLD, individually and as Colorado Secretary of State</p>	
<p>Plaintiff's Attorney: John Case, Atty reg. # 2431 John Case, P.C. 5460 S. Quebec St. #330 Greenwood Village CO 80111 Phone: (303) 667-7407 FAX: (303) 648-4786 E-mail: brief@johncaselaw.com</p>	<p>Case No: 2021CV033691 Courtroom: 280</p>

FIRST AMENDED COMPLAINT and JURY DEMAND

The plaintiffs state:

PURPOSE, PARTIES, AND VENUE

1. Plaintiffs are Colorado voters and elected officials who bring this lawsuit to protect the integrity of Colorado voting systems. The purpose of this case is NOT to change the results of any election, including the 2020 election.

2. Plaintiff Ron Hanks is a resident of Fremont County, Colorado who voted in the Colorado November 3, 2020 general election (hereafter "2020 election"). Mr. Hanks retired from military service after 32 years in the U.S. Air Force, where he served as a linguist, intelligence officer, and counterdrug officer. Mr. Hanks served in Desert Storm, Iraq, Kuwait, Kazakhstan, Afghanistan, and U.A.E. In the 2020 election, voters of Colorado House District 60 elected Mr. Hanks to serve in the Colorado House of Representatives. Mr. Hanks was the only Colorado legislator who traveled to Arizona to attend briefings on the Maricopa County election audit.

3. Plaintiff Amy Mitchell is a resident of Park County, Colorado who voted in the 2020 election. Ms. Mitchell is a 5th generation Coloradan. She is a graduate of the University of Colorado, and she has worked in the Natural Products Industry for 29 years. In the 2020 election, voters of Park County elected Ms. Mitchell to serve as a Park County Commissioner. In October 2021, Ms. Mitchell voted against the renewal of the contract to use Dominion Voting Systems for future elections in Park County.

4. Plaintiff Gary Moyer is a fourth-generation resident of Rio Blanco County, Colorado. Mr. Moyer voted in the 2020 election. He is a graduate of the University of Minnesota School of Forestry, an independent business owner, and he has served as a County Commissioner of Rio Blanco County since January 2019.

5. Plaintiff Jeff Rector is a resident of Rio Blanco County, Colorado who voted in the 2020 election. Mr. Rector graduated from high school in Rangely, Colorado and has owned his own well servicing company since the age of 27. Mr. Rector was elected a county commissioner of Rio Blanco County in 2016, and re-elected in 2020.

6. Plaintiff Merlin Klotz is a resident of Douglas County who voted in the 2020 election. Mr. Klotz has served as the Douglas County Clerk and Recorder since January 2015. He is a graduate of the University of Iowa with a degree in Accounting. Before being elected to the office of Clerk and Recorder, Mr. Klotz worked in the private sector.

7. Plaintiff Dallas Schroeder is a resident of Elbert County who voted in the 2020 election. Mr. Schroeder was appointed Elbert County Clerk and Recorder in 2013, when the previous clerk resigned. Mr. Schroeder was elected Clerk and Recorder in 2014, and for a second term in 2018. Mr. Schroeder graduated from Milligan College in Tennessee with a double major in history and business. He was a self-employed entrepreneur for 18 years until his appointment as Clerk and Recorder of Elbert County.

8. Defendant Jena Griswold (“Defendant”) has held the office of Colorado Secretary of State since January 8, 2019.

9. Venue is proper pursuant to C.R.C.P. 98(b)(2) and C.R.S. §24-4-106 (4.7).

FIRST CLAIM FOR RELIEF

(Declaratory Judgment – violations of C.R.S. § 1-5-608.5 – Defendant failed to employ a federally accredited laboratory to test Colorado voting systems before the 2020 election)

10. Plaintiffs incorporate all other allegations of this Complaint as if fully re-written.

11. Dominion Voting Systems, Inc. (hereafter “Dominion”) is a Delaware Corporation that markets and supplies voting systems to government entities throughout Colorado and the U.S.

12. Dominion Democracy Suite 5.11-CO (hereafter “5.11-CO”) is an electronic and/or electromechanical voting system that was used by sixty Colorado counties during the 2020 election cycle.

13. Elbert County used Dominion 5.11-CO in the 2020 election.

14. Clear Ballot Group Inc. (hereafter “Clear Ballot”) is a Delaware Corporation with its principal office located in Boston MA.

15. Clear Ballot markets and supplies voting systems to two counties in Colorado and to government entities throughout the U.S.

16. ClearBallot ClearVote 2.1 (hereafter “CV 2.1”) is an electronic and/or electromechanical voting system that was used by two Colorado counties during the 2020 election cycle.

17. Elbert County used CV 2.1 in the 2020 election.

18. C.R.S. § 1-5-612 states:

(1) The governing body of any political subdivision may, upon consultation with the designated election official, adopt an electronic or electromechanical voting system, including any upgrade in hardware, firmware, or software, for use at the polling locations in the political subdivision. The system may be used for recording, counting, and tabulating votes at all elections held by the political subdivision.

(2) An electronic or electromechanical voting system may be used only if the system has been certified by the secretary of state in accordance with this part 6.

(Underline added)

19. C.R.S. § 1-5-608.5 provides in pertinent part:

1-5-608.5. Electronic and electromechanical voting systems - testing by federally accredited labs . . .

(1) A federally accredited laboratory may test, approve, and qualify electronic and electromechanical voting systems for sale and use in the state of Colorado.

(3)

(a) If the electronic and electromechanical voting systems tested pursuant to this section satisfy the requirements of this part 6, the secretary of state shall certify such systems and approve the purchase, installation, and use of such systems by political subdivisions and establish standards for certification.

(Underline added)

20. On or about June 7, 2019, Defendant issued a letter certifying 5.11-CO. A copy of Defendant's Certification Letter is attached to this Complaint and incorporated by reference as Exhibit 1. The letter states in part:

"Pro V&V, a federally accredited voting system testing laboratory, tested Democracy Suite 5.11 CO in accordance with the test plans my office approved on May 20, 2019 and May 23, 2019.

(Exhibit 1, second paragraph, underline added).

21. On or about July 31, 2020, Defendant's deputy issued a letter certifying CV 2.1. A copy of Defendant's Certification Letter is attached to this Complaint and incorporated by reference as Exhibit 2. The letter states in part:

"Pro V&V, a federally accredited voting system testing laboratory, tested ClearVote 2.1 in accordance with the test plans my office approved on December 16, 2019.

(Exhibit 2, second paragraph, underline added).

22. In fact, Pro V&V was not a federally accredited voting system testing laboratory on the dates that Defendant issued Exhibits 1 and 2, or at any time during 2019 and 2020.

23. In late 2002, Congress passed the Help America Vote Act of 2002 (HAVA). HAVA created the U.S. Election Assistance Commission (EAC) and assigned to the EAC the responsibility for both setting voting system standards and providing for the voluntary testing and certification of voting systems.

24. In response to this HAVA requirement, the EAC has developed (a) the voting system standards in the form of the Voluntary Voting System Guidelines (VVSG), (b) a voting system certification program in the form of the Voting System Testing and Certification Program Manual, and (c) an election systems testing laboratory accreditation program in the form of the Voting System Test Laboratory Program Manual (VSTLPM)..

25. HAVA Section 231(b) (originally 42 U.S.C. §15371(b), now 52 U.S.C. §20971(a)) requires that EAC provide for the accreditation and revocation of accreditation of independent, non-federal laboratories qualified to test voting systems to Federal standards.

26. EAC published "The Voting System Test Laboratory Program Manual, Version 2.0" ("VSTLPM 2.0"), which became effective May 31, 2015.

27. VSTLPM 2.0 remained in effect from May 31, 2015, until February 12, 2021, when EAC voted to adopt "The Voting System Test Laboratory Program Manual, Version 3.0."

28. At all times relevant to this Complaint, VSTLPM 2.0 provided the procedural requirements of the EAC voting system Test Laboratory Accreditation Program.

29. Federal law (52 U.S.C. §20971(b)(2)(A)) and VSTLPM 2.0 provide that a voting systems test laboratory can receive federal accreditation only by vote of the EAC Commissioners, and VSTLPM 2.0 specifies that accreditation lasts for a period not exceeding two years.

30. Section 3.6 of VSTLPM 2.0 states:

3.6 Grant of Accreditation. Upon a vote of the EAC Commissioners to accredit a laboratory, the Testing and Certification Program Director shall inform the laboratory of the decision, issue a Certificate of Accreditation and post information regarding the laboratory on the EAC Web site.

3.6.1 Certificate of Accreditation. A Certificate of Accreditation shall be issued to each laboratory accredited by vote of the Commissioners. The certificate shall be signed by the Chair of the Commission and state:

3.6.1.1 The name of the VSTL [Voting System Testing Laboratory];

3.6.1.2 The scope of accreditation, by stating the Federal standard or standards to which the VSTL is competent to test;

3.6.1.3 The effective date of the certification, which shall not exceed a period of two (2) years; and

3.6.1.4 The technical standards to which the laboratory was accredited.

(VSTLPM 2.0 §3.6 [underline added])

31. At all times prior to February 1, 2021, EAC normally issued accreditation certificates for two years pursuant to VSTLPM 2.0 §3.6.

32. On or about February 24, 2015, EAC issued a Certificate of Accreditation to Pro V&V, Inc., Huntsville, Alabama. A copy of the Certificate is attached as Exhibit 3 and incorporated by reference. The Certificate states that it was issued on February 24, 2015, and that certification is effective through February 24, 2017.

33. On or about February 1, 2021, EAC issued a subsequent Certificate of Accreditation to Pro V&V, Inc., Huntsville, Alabama. That certificate documented Pro V&V's accreditation only for periods beginning on February 1, 2021. A copy of the Certificate is attached as Exhibit 4 and incorporated by reference.

34. During the 47 months period from February 24, 2017, until February 1, 2021, Pro V&V, Inc., Huntsville, Alabama was not a federally accredited testing laboratory.

35. 5.11-CO was not tested by a federally accredited laboratory prior to its use in the 2020 election.

36. CV 2.1 was not tested by a federally accredited laboratory prior to its use in the 2020 election.

37. Because Defendant violated C.R.S. § 1-5-608.5 by failing to have Colorado voting systems tested by a federally accredited laboratory before Defendant's certification of the voting systems, enabling their use in the 2020 election, an independent forensic audit is necessary to determine whether Colorado voting systems meet mandatory certification standards under Colorado law, and whether the systems accurately recorded the votes of the people of Colorado in the 2020 election.

38. Plaintiffs have a vital interest in obtaining the relief requested in this Claim for Relief.

39. As County Commissioners, Plaintiffs Amy Mitchell, Gary Moyer and Jeff Rector are responsible for ensuring that voting systems in their counties comply with Colorado statutes and regulations promulgated by Defendant.

40. As County Clerks and Recorders, Plaintiffs Merlin Klotz and Dallas Schroeder are responsible for ensuring that voting systems in their counties comply with Colorado statutes and regulations promulgated by Defendant.

41. At the time of the 2020 election, Plaintiffs were not aware that the voting systems in their respective counties had not been tested by a federally accredited laboratory, as required by C.R.S. § 1-5-608.5.

42. If Defendant had timely informed Plaintiffs prior to the 2020 election that the voting systems in their respective counties were not in compliance with state election law, Plaintiffs would have acted to make sure that the systems were properly tested and brought into compliance prior to the 2020 election.

43. If the relief requested in this Complaint is not granted, Plaintiffs Amy Mitchell, Gary Moyer, and Jeff Rector, and other County Commissioners throughout Colorado, could face potential criminal liability under C.R.S. 1-13-107 and 1-13-723 for violating a public official's duty under the election code.

44. If the relief requested in this Complaint is not granted, Plaintiffs Merlin Klotz and Dallas Schroeder, and other County Clerks and Recorders throughout Colorado, could face potential criminal liability under C.R.S. 1-13-107 and 1-13-723 for violating a public official's duty under the election code.

WHEREFORE, on their First Claim for Relief, Plaintiffs pray that this Honorable Court enter judgment declaring that Defendant violated C.R.S. § 1-5-608.5 by failing to have Colorado voting systems tested by a federally accredited laboratory before the 2020 election. Plaintiffs pray that the Court enter judgment that an independent forensic audit is necessary to determine

whether the voting systems meet legal standards, and whether the systems accurately recorded the votes of the people of Colorado in the 2020 election. Plaintiffs pray that the Court order the Defendant to pay the costs of such audit. Because of the importance of this case to the voters of Colorado, Plaintiffs pray for advancement on the docket and accelerated discovery pursuant to C.R.C.P. 57 (m). Plaintiffs pray for an award of costs, expert witness fees, reasonable attorney fees, and all other appropriate relief.

SECOND CLAIM FOR RELIEF

(Declaratory Judgment and injunctive relief – violations of C.R.S. § 1-7-802 – Defendant deleted or destroyed election records that election officials are required to preserve)

45. Plaintiffs incorporate all other allegations of this Complaint as if fully re-written.

46. In April of 2021, Defendant notified Colorado counties that Defendant would conduct a “Trusted Build” software update of county election equipment.

47. On information and belief, the Defendant conducted “Trusted Build” software updates of 62 counties in Colorado from April through August of 2021.

48. Employees of Defendant and Clear Ballot performed a “Trusted Build” modification of the Douglas County voting system in May 2021.

49. Employees of Defendant and Dominion performed a “Trusted Build” modification of the Elbert County voting system in August 2021.

50. C.R.S. § 1-5-601.5 states:

[Editor’s note: This version of this section is effective until July 1, 2022.]

All voting systems and voting equipment offered for sale on or after May 28, 2004, shall meet the voting systems standards that were promulgated in 2002 by the federal election commission. At his or her discretion, the secretary of state may require by rule that voting systems and voting equipment satisfy voting systems standards promulgated after January 1, 2008, by the federal election assistance commission as long as such standards meet or exceed those promulgated in 2002 by the federal election commission. Subject to section 1-5-608.2, nothing in this section shall be construed to require any political subdivision to replace a voting system that is in use prior to May 28, 2004.

(underline added)

51. The voting systems standards promulgated in 2002 by the Federal Election Commission (“FEC”) are set forth in FEC publication “Voting Systems Standards” Volumes 1 and 2 (“2002 VSS”).

52. C.R.S. § 1-7-802 states:

1-7-802 Preservation of election records.

The designated election official shall be responsible for the preservation of any election records for a period of at least twenty-five months after

the election or until time has expired for which the record would be needed in any contest proceedings, whichever is later. Unused ballots may be destroyed after the time for a challenge to the election has passed. If a federal candidate was on the ballot, the voted ballots and any other required election materials shall be kept for at least twenty-five months after the election.

(Underline added)

53. Colorado voting systems in 64 counties require that all ballots are scanned and stored electronically in a central location.

54. All ballot images are stored on a single physical server hosting a backend “Network Attached Storage” (NAS) application, which is part of an “election management system.” computer called “the server”.

55. The server stores ballot images, election project files and log files, as well as system and system application “log files,” including audit log files, and system software.

56. A “log file” consists of individual log events which represent a system-time correlated record of hardware and software event history, including security, communication, process, error, and operator events, on the computer system.

57. “Log files” contain a date-time stamp, and may contain other information such as usernames, initiated and terminated applications, attempted file system access and modification, and the IP address of any device which has connected to the server.

58. The presence of an IP address, in a log file, belonging to any device that is not part of the voting system, is evidence that the voting system was accessed by a device outside the closed network.

59. An election cannot be secure if the voting system components connect to and communicate with the Internet or any other computer network that is external to the voting system.

60. In order to certify an election, the county clerk must have the ability and expertise to verify that the voting system has not been accessed or used in an unauthorized manner, including the ability and expertise to review all the log files and entries to determine if there have been any unauthorized connections with the voting system from outside the closed network.

61. Defendant limited access to the system event logs of every county voting system by requiring a password that is kept secret from county clerks and the public.

62. The log files meet the requirements of public information under the Colorado

Open Records Act (“CORA”).

63. In the 2020 election, Mesa County used electronic vote-tabulating equipment that scanned ballots, interpreted marks on the ballots as votes, and then tabulated the votes for a final result.

64. As part of its operations, the Mesa County electronic vote-tabulating equipment produced electronic computer files that recorded how the system scanned and tabulated votes.

65. Such equipment also produced “operating system audit” files described in the 2002 VSS, section 2.2.5.3, which also are referred to hereinabove as “log files.”

66. 2002 VSS requires log files to be preserved as election records. 2002 VSS, section 2.2.5.3 requires operating system audit files to include “all session openings and closings,...connection openings and closings,...process executions and terminations, and for the alteration or deletion of any memory or file object.”

67. Log files are necessary to understand and audit how the electronic vote-tabulating equipment scanned, interpreted, and tallied votes.

68. 2002 VSS states, in section 4.3, that all systems shall “Maintain the integrity of voting and audit data during an election, and for at least 22 months thereafter, a time sufficient in which to resolve most contested elections and support other activities related to the reconstruction and investigation of a contested election.”

69. C.R.S. § 1-7-802 requires all electronic files that reside on the server, including log files, to be preserved for 25 months.

70. Along with certification of 5.11-CO, Defendant promulgated mandatory technical procedures directed for use by election officials within Colorado counties in configuring and operating the voting systems certified by Defendant.

71. The mandatory technical procedures included vendor-developed manual “2.09 – Democracy Suite EMS System Maintenance Manual, Version: 5.11-CO::3,” dated April 18, 2019, attached hereto and incorporated herein as Exhibit 5.

72. At Chapter 2, Section 2.1, Exhibit 5 prescribes that the system log file parameters be set at a level that insures the destruction of log files in the normal course of the system’s operation. (Exhibit 5, P. 4)

73. Defendant’s certification of 5.11-CO and promulgation of technical procedures which directed the configuration of 5.11-CO systems by Colorado counties in such a manner as to ensure the destruction of records of the 2020 election, violated C.R.S. § 1-7-802 by deleting or destroying records of the 2020 election.

74. Defendant’s employees, together with employees of the election system

vendor, conducted the “Trusted Build” of Mesa County election equipment on May 25 and 26, 2021.

75. On information and belief, during the “Trusted Build” of Mesa County election equipment, Defendant’s employees and employees of the system vendor permanently deleted or destroyed log files that were election records from the 2020 election.

76. Doug Gould, a qualified cyber-security expert, conducted a forensic examination of the voting systems of Mesa County used in the 2020 election. Mr. Gould’s initial report, dated September 15, 2021 is attached hereto and incorporated herein by reference as Exhibit 6. Mr. Gould concluded in pertinent part:

“Forensic examination found that election records, including data described in the Federal Election Commission’s 2002 Voting System Standards (VSS) mandated by Colorado law as certification requirements for Colorado voting systems, have been destroyed on Mesa County’s voting system, by the system vendor and the Colorado Secretary of State’s office. Because similar system modifications were reportedly performed upon county election servers across the state, it is possible, if not likely, that such data destruction in violation of state and federal law has occurred in numerous other counties.”

(Exhibit 6, P. 4)

77. Defendant’s 2021 “Trusted Build” process violated C.R.S. § 1-7-802 by deleting or destroying records of the 2020 election.

78. On information and belief, Defendant’s 2021 “Trusted Build” process deleted election records in all counties in which it was conducted in violation of C.R.S. § 1-7-802.

79. An independent forensic audit is necessary to determine the extent of deleted or destroyed records, whether such records can be reconstructed, and, to the extent possible, whether Colorado voting systems accurately recorded the votes of the people of Colorado in the 2020 election.

80. Defendant must be enjoined from deleting or destroying election records in the future.

81. Plaintiffs have a vital interest in obtaining the relief requested in this Second Claim for Relief.

82. If the “Trusted Build” process in 2021 erased or deleted election records from the election systems in their respective counties, Plaintiffs Amy Mitchell, Gary Moyer, and Jeff Rector, and other County Commissioners throughout Colorado, could face potential criminal liability under C.R.S. 1-13-107 and 1-13-723 for violating a public official’s duty under the election code.

83. If the “Trusted Build” process in 2021 erased or deleted election records from the election systems in their respective counties, Plaintiffs Merlin Klotz and Dallas Schroeder, and other County Clerks and Recorders throughout Colorado, could face potential criminal liability under C.R.S. 1-13-107 and 1-13-723 for violating a public official's duty under the election code.

WHEREFORE, on their Second Claim for Relief, Plaintiffs pray that this Honorable Court enter judgment declaring that Defendant violated C.R.S. § 1-7-802 by destroying election records as part of installing Dominion 5.11-CO and Defendant's 2021 “Trusted Build” process. Plaintiffs pray that the Court enter judgment that an independent forensic audit is necessary to determine the extent of deleted or destroyed records, whether such records can be reconstructed, and, to the extent possible, whether Colorado voting systems accurately recorded the votes of the people of Colorado in the 2020 election. Plaintiffs pray that the Court order the Defendant to pay the costs of such audit. Plaintiffs pray that the Court enjoin defendant from further altering or destroying election records. Plaintiffs pray that the Court order Defendant to preserve all election records of the 2020 election under her control until February 3, 2023, or until final judgment is entered in this case, whichever is later. Plaintiffs pray for an award of costs, expert witness fees, reasonable attorney fees, and all other appropriate relief.

THIRD CLAIM FOR RELIEF
(Judicial Review of Agency Action – C.R.S. § 24-4-106)

84. Plaintiffs incorporate all other allegations of this Complaint as if fully re-written.

85. Colorado County Clerk and Recorders (“CCRs”) have custody and control of all county election equipment.

New Election Rule 20.5.4

86. At all times prior to June 17, 2021, CCRs could lawfully hire or designate non-employee technical consultants with the necessary expertise to evaluate, audit, or otherwise ensure that electronic vote-tabulating equipment, and other election equipment, functions correctly and in accordance with Colorado law.

87. On June 17, 2021, Defendant promulgated, on an alleged emergency basis, a new version of Election Rule 20.5.4 that prohibits CCRs from allowing qualified technical consultants access to election equipment. Defendant's emergency Rule 20.5.4 is attached hereto and incorporated herein by reference as Exhibit 7.

88. Rule 20.5.4 allows ONLY the following people to have access to election equipment: (1) employees of Defendant; (2) employees of a County Clerk, (3) election judges, (4) voting system vendors. No independent consultants are allowed.

89. Defendant does not employ on her staff a qualified cyber-security expert with the skills and experience necessary to test the integrity of Colorado voting systems.

90. No Colorado county clerk employs a qualified cyber-security expert with the skills and

experience necessary to test the integrity of Colorado voting systems.

91. Election judges are not cyber security experts who can verify whether the voting system in his or her county is secure nor whether it complies with Colorado law.

92. Employees of Dominion are not cyber security experts, and it would be against Dominion's economic interest to find that a Colorado voting system is insecure or does not comply with Colorado law.

93. Thus, Defendant's new Rule 20.5.4 effectively prevents qualified cyber security experts from being employed to test the integrity of Colorado voting systems and their compliance with Colorado law.

94. Defendant stated on June 17, 2021 that she promulgated Exhibit 7 to prevent an independent forensic audit of the 2020 election, such as occurred in Arizona.

95. "Adoption of these new and amended rules on a temporary basis is necessary given the public concern regarding rapidly increasing instances of purported "forensic audits" conducted by unknown and unverified third parties nationwide." (Exhibit 7, P. 6)

96. On June 17, 2021 Defendant tweeted:

"My office just issued rules prohibiting sham election audits in the state of Colorado. We will not risk the state's election security nor perpetuate The Big Lie. Fraudits have no place in Colorado." (Exhibit 8).

97. Rather than preventing "fraudits," "Big Lies," and "purported forensic audits," Exhibit 7 prevents legitimate forensic and other audits of Colorado elections.

98. Defendant adopted Rule 20.5.4 as part of her plan to conceal from the citizens of Colorado the vulnerabilities of the Colorado election system and the destruction of election records that occurred during the 2021 "Trusted Build."

99. Defendant directed her staff and CCRs to withhold from the public information related to the schedule for the "Trusted Build" modification of Colorado Dominion Voting Systems from version 5.11-CO to 5.13, conducted in 2021.

100. Exhibit 9, which is attached hereto and incorporated herein by reference, is a report of security testing performed in 2020 by Synack Inc. at the direction of Defendant's security officer.

101. Defendant withheld from the public all information related the election system vulnerability findings, which are reported in Exhibit 9.

102. On July 7, 2021, Maureen West, a licensed Colorado attorney, made a CORA request to Defendant for information related to Emergency Rule 20.5.4. The Cora request is attached hereto and incorporated herein as Exhibit 10.

103. Defendant failed to provide the information requested in Exhibit 10.

104. The Dominion voting system used in 60 Colorado counties relies on Dell computers that were made in Mexico and China.

105. Dell laptop computers used in the Colorado voting system were manufactured in Chengdu, China.

106. Dell computers used in the Colorado voting systems were ordered and built with the ability to connect to external networks and devices, including the internet, both through wireless and wired connections.

107. Election Rule 20.19.1 (8 CCR 1505-1) appears to prohibit voting systems from connecting to the internet. The Rule states:

20.19.1 The county must use the voting system only on a closed network or in a standalone fashion.

(8 CCR 1505-1:20).

108. Election Rule 1.1.14 defines “Closed network” as “a network configuration in which voting system components connect to and communicate only with each other and not with the Internet or any other computer network.” (8 CCR 1505-1:4)

109. Because election system computers are manufactured with wireless connectivity, there is no way to prevent them from being connected to the internet, nor for CCRs and Colorado election officials to determine whether or not the election system computers are, have been, or can connect to the internet or to other outside networks.

110. Only a forensic audit with access to log files can determine whether or not an election computer system was “hacked” or subjected to unauthorized access during, or affecting, an election.

111. By requiring a secret password to access log files and entries, Defendant precludes County Clerks and the citizens of Colorado from knowing whether there have been unauthorized connections with the voting system during an election.

112. Because Defendant refuses to allow county clerks to review log files after an election, citizens and governing officials of each county should be allowed to employ a qualified cyber-security expert to conduct an independent forensic audit of the voting system,

including voting equipment, paper ballots, ballot envelopes, and original signatures, to determine if there were unauthorized connections, or discrepancies in paper ballots, ballot envelopes, and original signatures, and if so, how each unauthorized connection, access or use of voting equipment, or discrepancy in paper ballots, affected election results.

113. The “Risk Limiting Audit” (RLA) permitted by Defendant’s election rules is only a statistical sample of one candidate race or one ballot issue.

114. An RLA does not verify the authenticity of ballots or the eligibility of voters.

115. An RLA is insufficient to guarantee the security or integrity of an election.

116. In the most recent election, November 2, 2021, the El Paso County clerk’s office transmitted election data to Defendant’s website using an internet connection. As batches of votes were transmitted, the total votes counted increased on Defendant’s website by approximately 20 per cent. This happened twice. The El Paso County Clerk telephoned Defendant’s office. Defendant’s office was unaware that its website was showing inflated vote totals from El Paso County. Defendant’s office and the El Paso County Clerk agreed to manually decrease the vote totals that had been transmitted by the voting system.

117. Votes must be cast by anonymous ballot, but the vote counting process should be transparent.

118. Defendant promulgated Rule 20.5.4 with the express purpose of avoiding transparency in the vote counting process.

119. Rule 20.5.4 prohibits independent verification that an election was free or fair.

120. Rule 20.5.4 prevents CCRs from exercising their statutory duties to conduct free and fair elections.

121. On August 3, 2021, Defendant held a public hearing via Zoom to receive public input on Exhibit 7.

122. At the hearing, 360 concerned citizens attended. Sixty-three citizens spoke in opposition to the new Exhibit 7. No person spoke in favor of adopting Exhibit 7.

123. Despite unanimous opposition to Exhibit 7, Defendant adopted it on August 26, 2021.

124. Exhibit 7 became effective October 15, 2021.

New Election Rules Promulgated August 26, 2021

125. On August 26 Defendant adopted new election rules that became effective

October 15, 2021 (“new rules”).

126. A redlined version of the new Judicial review of Defendant’s Rules is attached hereto and incorporated herein by reference as Exhibit 11.

127. Plaintiffs ask the Court to annul Exhibit 11 *in toto* because the new rules centralize power in Defendant, give her dictatorial authority to decertify county voting systems and remove county clerks who disagree with her, and prevent county commissioners and county clerks from carrying out their statutory duties. Specific examples are set forth below.

Rule 2.12.3

128. New Rule 2.13.2 states:

Amendments to Rule 2.13.2 concerning list maintenance under section 8 of the National Voter Registration Act of 1993:

2.13.2 In accordance with section 1-2-605(7), C.R.S., no later than 90 days following a General Election, the ~~county clerk in each county must~~ DEPARTMENT OF STATE, WORKING IN CONJUNCTION WITH COUNTY CLERKS, WILL cancel the registrations of electors:

- (a) Whose records have been marked “Inactive – returned mail”, “Inactive – undeliverable ballot”, or “Inactive – NCOA”; AND
- (b) Who have been mailed a confirmation card; and
- (c) Who have ~~since~~ THEREAFTER failed to vote in two consecutive general elections.

129. Defendant cites C.R.S. §1-2-605(7) as her statutory authority for the new rule.

130. C.R.S. §1-2-605(7) states:

(7) If an elector whose registration record is marked “Inactive” fails to update his or her registration record, fails to respond to any confirmation card, and fails to vote in any election conducted by the county clerk and recorder during the time period that includes two consecutive general elections since the elector’s registration record was marked “Inactive”, the county clerk and recorder shall cancel the elector’s registration record. Nothing in this section allows an elector’s registration record to be canceled solely for failure to vote.

(underline added)

131. As the Court can see, the statute C.R.S. §1-2-605(7) gives each county clerk

and recorder exclusive authority to cancel voter registration records in his or her respective county.

132. The legislature gave Defendant no authority under C.R.S. §1-2-605(7) to cancel voter registration records.

133. Defendant promulgated new rule 2.13.2 to usurp the power of CCRs to manage voter registration records in their respective counties.

134. Rule 2.13.2 exceeds Defendant's rule making authority.

135. Defendant's promulgation of Rule 2.13.2 is an *ultra vires* act.

Colorado statewide Voter Registration Database - SCORE

136. C.R.S. 1-2-301 through 1-2-305 establish a statewide voter registration system, which Defendant refers to as 'SCORE' on Defendant's website.

137. Defendant is responsible for maintaining the statewide voter registration database known as SCORE.

138. The statewide voter registration database ("SCORE") is open to search by internet browsers.

139. SCORE is not a secure database, as shown by the following facts:

140. Exhibit 12, attached hereto and incorporated herein by reference, is an email exchange between Ana Konduris of Monument Colorado and Defendant's office.

141. On June 3, 2021 Ms. Konduris made a CORA request to Defendant's CORA Custodian for every IP address that accessed SCORE from January 1, 2018 through June 1, 2021. (Exhibit 12, P. 1)

142. On June 28, 2021 Kerry Colburn, a legal and policy analyst in Defendant's office, emailed to Ms. Konduris the list of IP addresses that she requested. (Exhibit 12, P. 2)

143. The list of IP addresses provided by Defendant to Ms. Konduris is attached hereto and incorporated herein by reference as Exhibit 13.

144. Geographic locations of the IP addresses listed on Exhibit 13 are depicted on the map in Exhibit 14, which is attached hereto and incorporated herein by reference.

145. As the Court can see in the international map (Exhibit 14, bottom), IP addresses from Brazil, Germany, and Mozambique accessed the voter registration records of Colorado voters.

146. As the Court can see from the north American map (Exhibit 14, top), Colorado voter information was accessed from Ottawa, Canada and from the states of Washington (multiple times), Oregon, California (multiple times, multiple locations), Arizona (multiple times, different locations), Utah (multiple times, different locations), New Mexico, Wyoming, Montana, Texas (multiple times, multiple locations), Oklahoma (multiple times and locations), Arkansas, Florida, Georgia, Maryland, New York, Ohio, Indiana, Illinois, Michigan, Wisconsin, and Iowa.

147. The above facts show that foreign actors in other states other countries can access the confidential information of Colorado voters in the state registration database.

148. In November of 2015, Colorado State Auditor Dianne E. Ray, C.P.A., reported on the performance of the Colorado Department of State. Of note, the State Auditor found vulnerability in the “state information technology assets,” i.e. the SCORE voter registration database.

149. Relevant portions of the State Auditor’s report are attached hereto and incorporated herein by reference as Exhibit 15.

During our audit work, we identified certain matters that are not included in this audit report that were reported to the Department’s management in a separate confidential report dated November 2015. These matters were considered sensitive to protecting state information technology assets.

(Exhibit 15, p.4, underline added)

150. Defendant’s predecessor Wayne Williams, who was Secretary of State in 2015, did not inform the people of Colorado about the Auditor’s confidential report that exposed vulnerabilities in the state voter registration database.

151. In the summer of 2020, Defendant hired Synack, a cybersecurity consulting company, to test vulnerabilities in the voter registration website. Synack found seven vulnerabilities (Exhibit 9, *supra*, P. 1).

152. Defendant did not inform Plaintiffs, or county officials in other counties, or the people of Colorado, about the Synack report findings.

153. New rule 7.11 states:

7.127.11 At each Voter Service and Polling Center, election judges and, if appropriate, election staff, must:

7.12.17.11.1 Provide all services outlined in 1-5-102.9, C.R.S., INCLUDING PROVIDING BLANK CURE FORMS AND COLLECTING COMPLETED CURE FORMS FOR VOTERS WHO WISH TO CURE THEIR BALLOT IN ACCORDANCE WITH SECTIONS 1-2-502.5 (4)(C), 1-7.5-107 (3.5)(D), OR 1-7.5-107.3 (1.5), C.R.S.; and

7.12.2-7.11.2 Use WebSCORE to register voters; update existing voter registrations; issue and replace mail ballots; and issue, spoil, and replace in-person ballots.

(underline added).

154. Rule 7.11.2 requires county clerks to use the vulnerable statewide voter registration system as part of county voting systems.

155. The above evidence shows that (1) Defendant hires cybersecurity experts to assist Defendant, (2) Defendant does not inform Colorado voters of vulnerabilities in the system, and (3) Defendant requires county commissioners and county clerks and recorders to use the state's vulnerable statewide voter registration database; and, (4) Defendant's new rules prohibit county commissioners and county clerks and recorders from hiring cybersecurity experts to protect their respective county voting systems.

156. Judicial review of the new rules is available under C.R.S. § 24-4-106, and C.R.S. § 1-1-110 (1.5).

157. Injunctive relief is expressly authorized as a remedy by C.R.S. §24-4-106 (4.7)

158. This claim for judicial review is timely under C.R.S. § 24-4-106 (4).

159. The new rules are unlawful, exceed Defendant's statutory authority, and unlawfully deprive Plaintiffs of their rights to make sure that elections in Colorado are secure, free, and fair.

160. Plaintiffs ask the Court to stay the new rules until further order of court.

161. If the Court stays the new rules, there is no harm to Defendant or to the public, because county commissioners and county clerks can continue to do their jobs the same as they did before the new rules were promulgated.

WHEREFORE, on their Third Claim for Relief, Plaintiffs pray that this Honorable Court grant the following relief:

- (1) Stay the effective date of the new rules until further Order of Court;
- (2) Declare that Rule 20.5.4 is contrary to law and beyond Defendant's legal authority to implement;
- (3) Declare that Rule 20.5.4 is contrary to public policy and contrary to the public interest in free and fair elections;
- (4) Annul Rule 20.5.4 and permanently enjoin Defendant from enforcing it.

- (5) Declare that Rule 2.12.3 is contrary to law and beyond Defendant's legal authority to implement;
- (6) Declare that Rule 2.12.3 is contrary to public policy and contrary to the public interest in free and fair elections;
- (7) Annul Rule 2.12.3 and permanently enjoin Defendant from enforcing it.
- (8) Declare that Rule 7.11 is contrary to law and beyond Defendant's legal authority to implement;
- (9) Declare that Rule 7.11 is contrary to public policy and contrary to the public interest in free and fair elections;
- (10) Annul Rule 7.11 and permanently enjoin Defendant from enforcing it.
- (11) Allow Plaintiffs to amend their complaint and prayers for relief as additional facts are produced during discovery.
- (12) For advancement on the trial docket and accelerated discovery;
- (13) For an award of costs and reasonable attorney fees;
- (14) And for such further relief as the Court deems just.

PLAINTIFFS DEMAND TRIAL BY JURY OF DISPUTED ISSUES OF FACT

Respectfully submitted November 18, 2021.

JOHN CASE, P.C.
Counsel for Plaintiffs

s/John Case

John Case, #2431

Plaintiff's addresses are confidential

**STATE OF COLORADO
Department of State**

1700 Broadway, Suite 200
Denver, CO 80290



EXHIBIT 1, Page 1

**Jena M. Griswold
Secretary of State**

**Judd Choate
Director, Elections**

DATE FILED: November 19, 2021 10:14 PM
FILING ID: A3D9A19A24908
CASE NUMBER: 2021CV33691

June 7, 2019

Mr. Nick Ikonomakis
Vice President, Development
Dominion Voting Systems, Inc.
1201 18th Street, Suite 210
Denver, CO 80202

Re: Certification of DVS Democracy Suite 5.11-CO

Dear Mr. Ikonomakis:

In response to the Application for Modification of a Voting System dated June 6, 2019, as amended, and in accordance with section 1-5-608.5, C.R.S, please be advised that I hereby certify Dominion Voting Systems' Democracy Suite 5.11-CO voting system for use in the State of Colorado. County Clerks and Recorders may now separately apply for authorization to acquire, install and use the Democracy Suite 5.11-CO voting system, pursuant to section 1-5-613(2), C.R.S., and Election Rule 11.8.4.

My office examined the original and amended Applications for Modification of a Voting System and supporting documentation, including the associated technical data package. In addition, Pro V&V, a federally accredited voting-system testing laboratory, tested Democracy Suite 5.11-CO in accordance with the test plans my office approved on May 20, 2019 and May 23, 2019. My office also reviewed Pro V&V's test reports dated June 3, 2019 and June 7, 2019, and the Colorado requirements matrix completed and transmitted by Pro V&V on June 4, 2019. Based on this review, I conclude that Democracy Suite 5.11-CO substantially complies with the requirements of the 2002 Voting System Standards (VSS) promulgated by the Federal Election Commission, and the Colorado standards contained in sections 1-5-601.5, 1-5-615, and 1-5-616, C.R.S., and Election Rule 21.

I reserve the right to promulgate conditions of use in connection with the use by political subdivisions of the Democracy Suite 5.11-CO voting system, and to amend those conditions from time to time, in accordance with section 1-5-608.5(3)(b), C.R.S.

Sincerely,

Jena M. Griswold
Colorado Secretary of State

STATE OF COLORADO
Department of State
1700 Broadway, Suite 200
Denver, CO 80290



Jena M. Griswold
Secretary of State
Judd Choate
Director, Elections Division

DATE FILED: November 19, 2021 10:14 PM
FILING ID: A3D9A19A24908
CASE NUMBER: 2021CV33691

July 31, 2020

Ms. Gwenyth Winship
State Certification and Government Relations Manager
Clear Ballot Group, Inc.
7 Water Street, Suite 700
Boston, MA 02109

Re: Temporary Approval of ClearVote 2.1 voting system

Dear Ms. Winship:

In response to the Application for Certification or Modification of a Voting System dated December 16, 2019 (amended February 28, 2020), and in accordance with section 1-5-619, C.R.S., and Secretary of State Election Rule 21.6, please be advised that I hereby temporarily approve Clear Ballot Group's ClearVote 2.1 voting system for use in the State of Colorado and in the 2020 General Election. County Clerks and Recorders may now separately apply for authorization to acquire, install and use the ClearVote 2.1 voting system, pursuant to section 1-5-613(2), C.R.S., and Election Rule 11.8.4.

My office examined the original and amended Applications for Certification or Modification of a Voting System and supporting documentation, including the associated technical data package. In addition, Pro V&V, a federally accredited voting-system testing laboratory, tested ClearVote 2.1 in accordance with the test plans my office approved on December 16, 2019. My office also reviewed the Colorado requirements matrix completed and transmitted by Pro V&V on February 12, 2020, and Pro V&V's test report dated April 22, 2020. Based on this review, I conclude that ClearVote 2.1 substantially complies with the requirements of the 2002 Voting System Standards (VSS) promulgated by the Federal Election Commission, and the Colorado standards contained in sections 1-5-601.5, 1-5-615, and 1-5-616, C.R.S., and Election Rule 21.

I reserve the right to promulgate conditions of use in connection with the use by political subdivisions of the ClearVote 2.1 voting system, and to amend those conditions from time to time during the temporary approval period, in accordance with section 1-5-608.5(3)(b), C.R.S.

Sincerely,

Ian J. Rayder
Colorado Deputy Secretary of State



United States Election Assistance Commission

DATE FILED: November 19, 2021 10:14 PM
FILING ID: A3D9A19A24908
CASE NUMBER: 2021CV33691

Certificate of Accreditation

Pro V&V, Inc. Huntsville, Alabama

is recognized by the U.S. Election Assistance Commission for the testing of voting systems to the 2005 Voluntary Voting Systems Guidelines under the criteria set forth in the EAC Voting System

Testing and Certification Program and Laboratory Accreditation Program. Pro V&V is also recognized as having successfully completed assessments by the National Voluntary Laboratory Accreditation Program for conformance to the requirements of ISO/IEC 17025 and the criteria set forth in NIST Handbooks 150 and 150-22.

Effective Through

February 24, 2017

Date: 2/24/15

Acting Executive Director, U.S. Election Assistance Commission

EAC Lab Code: 1501

**United States Election Assistance Commission**

DATE FILED: November 19, 2021 10:14 PM
FILING ID: A3D9A19A24908
CASE NUMBER: 2021CV33691

Certificate of Accreditation

**Pro V&V, Inc.
Huntsville, Alabama**

is recognized by the U.S. Election Assistance Commission for the testing of voting systems to the 2005 and 2015 Voluntary Voting Systems Guidelines (VVSG 1.0 & 1.1) under the criteria set forth in the EAC Voting System Testing and Certification Program and Laboratory Accreditation Program. Pro V&V is also recognized as having successfully completed assessments by the National Voluntary Laboratory Accreditation Program for conformance to the requirements of ISO/IEC 17025 and the criteria set forth in NIST Handbooks 150 and 150-22.

Original Accreditation Issued on: 2/24/2015

*Accreditation remains effective until revoked
by a vote of the EAC pursuant to 52 U.S.C. §
20971(c)(2).*

Mona Harrington

Date: 2/1/21

*Mona Harrington
Executive Director, U.S. Election Assistance Commission
EAC Lab Code: 1501*

DATE FILED: November 19, 2021 10:14 PM
FILING ID: A3D9A19A24908
CASE NUMBER: 2021CV33691

2.09 - Democracy Suite[®] EMS System Maintenance Manual

Version: 5.11-CO::3

April 18, 2019

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CHAPTER 1: INTRODUCTION

NOTE: This document is a specification for maintenance of the Democracy Suite Election Management system designed and manufactured by Dominion Voting Systems Corporation.

1.1 Document Use

This document is intended for use with the Democracy Suite® 5.11 platform.

1.2 Purpose and Scope

This document describes Democracy Suite Election Management System maintenance procedures. This document provides all information necessary for the Election Management System use by all personnel who support pre-election and election preparation, post-election and central counting activities, as applicable.

1.3 Relevant Disclaimers

This document may make reference to certain Democracy Suite functionalities that are not part of the current 5.11 campaign and should be disregarded throughout the document.

For a full list of relevant disclaimers, please see the “Relevant Disclaimers” section in the *2.02 - Democracy Suite System Overview Document*.

1.4 Network Data Transmission

Please, be aware that, at this point, there is no modem transmission of results data over a network.

1.5 Data Handling in the Processor and Memory Units

Within the EMS, the data is handled by Windows Operating System.

1.6 Data Output Initiation and Control

The EMS consists of several data outputs. They are, here, grouped by the activities (see *2.03 - Democracy Suite® EMS Functionality Description*, section the Basic EMS Workflow). After the election project has been defined, the ballot artwork is satisfying, the official ballots are produced.

Furthermore, during the process of the defining and configuring optical

tabulators - (ImageCast® Precinct, ImageCast® Evolution and ImageCast® Central devices), the Device Configuration Files (DCF), MBS (machine/or device behavioral settings) and Voting Information Files (VIF) output data needed for the proper operation of the tabulator devices are created. This phase also includes producing (programming) the Compact Flash memory packs with election files for tabulator devices and programming the security tokens for tabulator access control activities. Next, the set of reports can be created. Among them is the auditing report. This report lists all the actions performed for the current election project. All aforementioned outputs are initiated by the electoral office representative. A Dominion representative assists when jurisdiction representatives and officers need help. In addition, please, refer to TDP 2.10 - *Democracy Suite® Personnel Deployment and Training Requirements*.

1.7 Power Conversion/Conditioning

For information on power conversion, please refer your workstation vendor documentation.

1.8 Acquiring Test and Diagnostic Information

Please refer to 2.07 - *Democracy Suite® System Test and Verification* in addition to this manual.

1.9 Applicable Documents

VVSG 1.0, Volume II, Version 1.0, Section 2.9 System Maintenance Procedures

1.10 Document Organization

Every attempt has been made to produce the document structured according to the VVSG 1.0 requirements (VVSG 1.0, Volume 2, Section 2.9).

- Section 1 - Introduction - purpose and scope of the document (this section)
- Section 2 - System Maintenance Manual - provides an overview of the system for maintenance and references to specific documents that explain the maintenance procedures and policies in greater detail.

1.11 Design Responsibility

Dominion Voting is the design authority.

1.12 Document Status

This is a working specification for discussion and analysis. Details are subject to change.

1.13 Patent Status

Certain system concepts, as well as many implementation and construction details are protected by a series of U.S. and foreign patents pending.

CHAPTER 2: MAINTENANCE PROCEDURES

2.1 Preventative Maintenance

2.1.1 Audit Log Contents

According to industry standards, EMS uses Windows Event Audit logging for tracking the details of each change event of all system software and hardware changes.

By default, when the initial maximum size of a log is reached, new events overwrite older events as needed. As such, it is in the best interest of the user to Archive old items.

2.1.1.1 Increasing the Size of an Audit Log

The Audit logs will reside on a disk that has at least 20GB available space. A separate disk or disk array may be considered for these which must be secure against physical and logical tampering.

Application Log

The Application Log is used by Windows to log application audit events that have been activated. Because of the large number of events that will be logged during normal use, this log will grow significantly.

Dominion Voting requires the following policies be put in place for the Application Log:

- The size of the Application log will be set to a minimum of 2GB.

To set the size:

1. Start, Administrative Tools, Event Viewer.
2. Expand “Windows Logs” in left tree.
3. Right click “Application” and select “Properties”.
4. Increase the value of the “Maximum Log Size” to at least 20480 KB.
5. Choose the “Overwrite events as needed” option.

Security Log

The Security log is used by Windows to log security audit events that have been activated. Because of the large number of events that will be logged during normal use, this log will grow significantly. Dominion Voting requires the following policies be put in place for the Security Log:

- The size of the Security log will be set to a minimum of 2GB.

To set the size:

1. Start, Administrative Tools, Event Viewer.
2. Expand “Windows Logs” in left tree.
3. Right click “Security” and select “Properties”.
4. Increase the value of the “Maximum Log Size” to at least 20480 KB.
5. Choose “Overwrite events as needed” option.

EMS System Log

The Event Log is used by Windows to log audit events that have been activated. Because of the large number of events that will be logged during normal use, this log will grow significantly.

Dominion Voting requires the following policies be put in place for the Event Log:

- The size of the Event Log will be set to a minimum of 2GB.

To set the size:

1. Start, Administrative Tools, Event Viewer.
2. Expand “Applications and Services Logs” in left tree.
3. Right click “EMS System” and select “Properties”.
4. Increase the value of the “Maximum Log Size” to at least 20480 KB.
5. Choose the “Overwrite events as needed” option.

2.1.1.2 How to Archive a Log

If you want to save your log data, you can archive event logs in any of the following formats:

- Log-file format (.evt)
- Text-file format (.txt)
- Comma-delimited text-file format (.csv)

To archive a log, follow these steps:

1. Click “Start”, “Administrative Tools”, and then click “EventViewer”.
2. Expand the tree and locate the log you want to archive. Right-click on the log and then click “Save All Events As”.
3. Specify a file name and location where you want to save the file. In the “Save As” window, select the desired format to save the file as, and then click “Save”.

The suggested period for archiving is once a week, on Friday after all work has been done.

2.1.1.3 Enabling Audit Log on Specific Folders

You must be careful which objects you audit or you will end up with information overload problems. It's very easy to end up with information overload because if you audit a folder, the audit applies to every object within the folder and within any subfolders. The audit applies to child objects, grandchild objects, and so on. Therefore, when possible, auditing objects at the file level is recommended.

We also recommend that you avoid auditing system files and folders. Doing so can also result in information overload. For example, if you were to audit the Windows folder, you would end up with countless audit log entries because the system is constantly accessing files found in this folder. If you really wanted to audit Windows, a better solution might be to audit the registry files.

To audit a file or folder, open Windows Explorer and navigate to the folder you want to audit. Right-click it and select the Properties command from the resulting menu. You will see the objects Properties sheet. Select the Security tab, and click the Advanced button to display the Access Control Settings Properties sheet for the object. Select the Auditing tab. Click the Continue button, and you will be presented with a list of users and groups which actions were audited. If you want to add some user which actions you want to audit click on Add button and type the users or groups name that you wish and click OK. New window will open, see

Figure 2-1 . As you can see, you can enable success and/or failure audits for many types of access to the file or folder on a user or group basis.

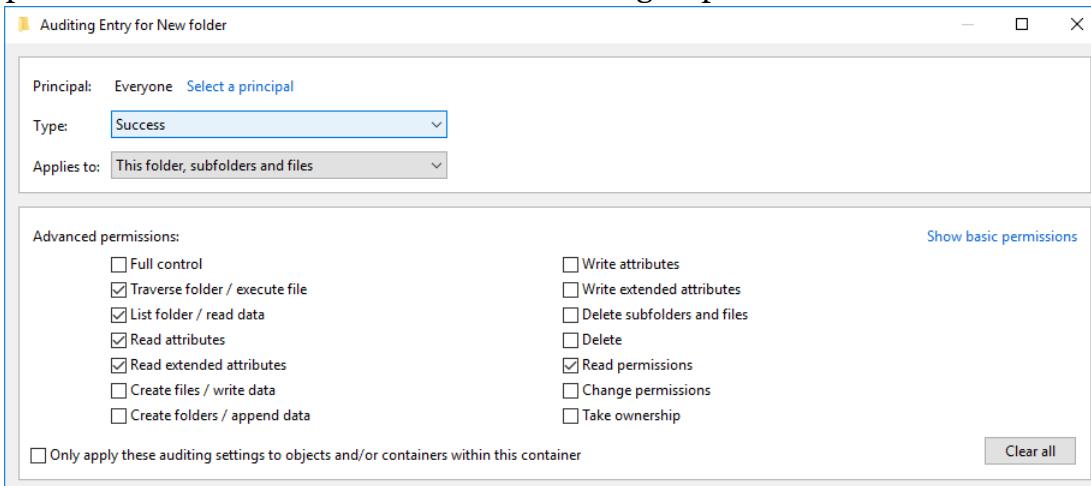


Figure 2-1: Auditing of Different Access Types for Files and Folders.

We recommend only auditing the folders NAS and Databases.

2.1.1.4 Monitoring Audit Log on Specific Folders

To view the audit results, open the Start, then Administrative Tools and then the Event Viewer. When the Event Viewer opens, open Windows Logs in left side tree, then click the Security container to see the security logs. You will notice how many log entries were applied in a matter of a few seconds. This is why it's so important to use discretion when creating an audit policy. If you want to get more information on a particular event, simply double-click it.

2.1.2 Updating Anti Virus Software

For information regarding Installation and Configuration of Anti Virus software, please refer to the following documents:

- *Democracy Suite EMS Client Installation and Configuration Procedure*
- *Democracy Suite EMS Express System Installation and Configuration Procedure*
- *Democracy Suite EMS Standard System Installation and Configuration Procedure*

Also, refer to the same document for details on how to download manually download updates for Anti Virus software.

Suggested period for checking updates for Anti Virus software is once a week, on Friday after all work has been done.

2.1.3 Defragmenting

Disk defragmentation should be done on regular basis. Suggested period for defragmenting is once a week, on Friday after all work has been done.

To defragment the partition, go to **Start > All Programs > Accessories > System Tools > Disk Defragmenter**. You will see here the list of all partitions you have (see Figure 2-2).

Select the partition you want to defragment and push Defragment disk button. The process may take some time to finish.

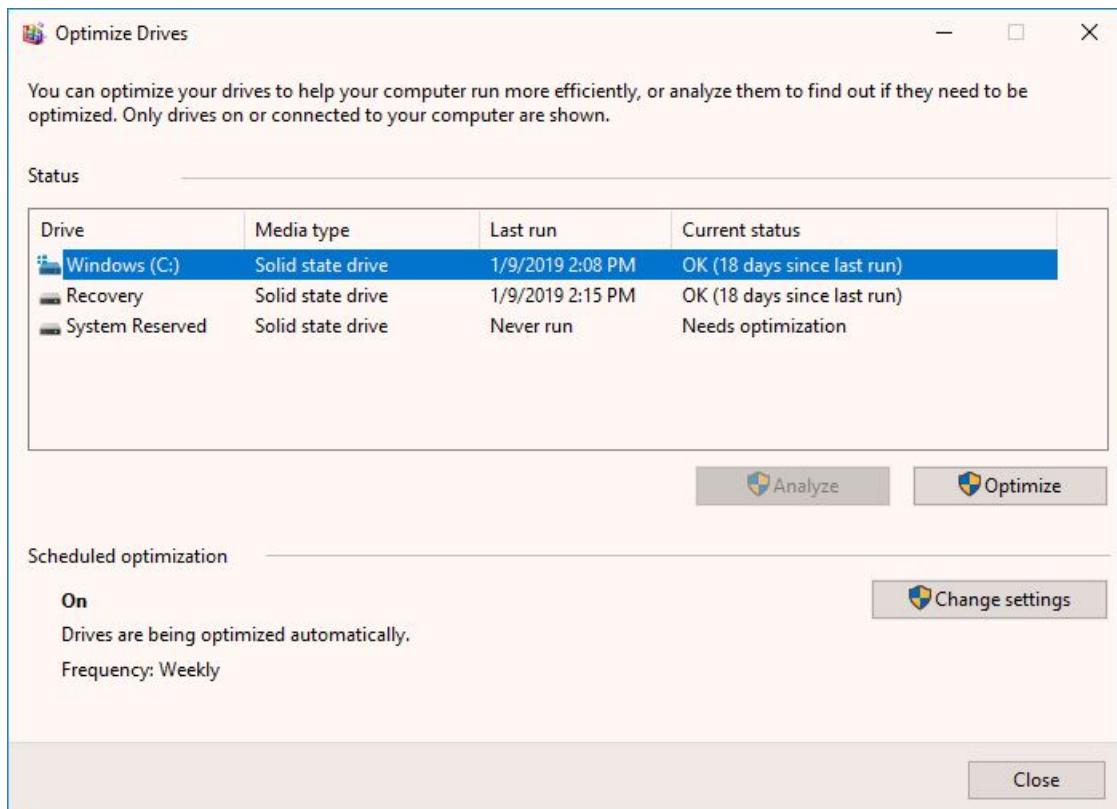


Figure 2-2: Disk Defragmentation.

2.1.4 Personnel Requirements

All preventive maintenance procedures must be performed by an EMS Administrator or by Dominion support personnel. At minimum, each jurisdiction must have at least one EMS Administrator who is experienced in server and database installation, configuration and administration as well Democracy Suite EMS.

2.2 Direct Server Maintenance

Follow the procedures and guidance provided in the various Manufacturers manuals that arrived with your server and client computer hardware. In addition, here are some common Administrator tasks that are recommended. Your jurisdiction may also have IT hardware and software maintenance programs.

NOTE: The system you were provided was certified to a certain configuration. Do not take steps to invalidate that Certification by installing unauthorized software and hardware. Contact your Dominion Voting Systems customer service staff before installing or removing anything on the voting system.

Activities include the following:

1. Review Audit logs
 - a. Check application log for warning and error messages for service startup errors, application or database errors and unauthorized application installs
 - b. Check security log for warning and error messages for invalid logons, unauthorized user creating, opening or deleting files
 - c. Check system log for warning and error messages for hardware and network failures
 - d. Check EMS logs for warnings and error messages
 - e. Report suspicious activity to the proper authorities for your jurisdiction.
2. Perform/verify daily backup
 - a. Run and/or verify that a successful backup of system and data files has completed.
3. Track/monitor system performance and activity
 - a. Use Task Manager to check for CPU and memory usage
 - b. Use Resources Monitor in Task Manager to monitor all system resources
 - c. If hardware vendor provided some kind of software as hardware monitor, use it to check if hardware is operating normally.
4. Physically check and clean the server and client computers
 - a. Ensure that cooling fans are operational
 - b. Remove dust and other buildup from computer chassis
 - c. Pay attention to new and odd noises emanating from a computer
 - d. Ensure network and power connections are fully seated

NOTE: Please refer to *Democracy Suite® EMS Election Event Designer User Guide*, section A.7 Backup Database.

2.3 Corrective Maintenance Procedures

The corrective maintenance procedure are handled as described in the Problem and Incident Management and Change Control Procedures sections of the TDP document *2.11 - Democracy Suite® Configuration Management Process*.

2.4 Troubleshooting and Recovering From an Abnormal State

If any issues are encountered while configuring the EMS Application Server (EMS APPS) using DCM, please try the following troubleshooting procedure:

1. Open SQL Configuration Server
2. Open SQL Server Service
3. Change user to 'NT Service\MSSQLSERVER', no password needed just click 'Apply'.
4. Restart SQL Server Service
5. Open Computer Management
6. Navigate to 'Local Users and Groups'
7. Delete the following user accounts if they exist:

emssqluser

emsdbadmin

emssqluser

8. Reboot the computer
9. Run DCM again
10. If the problem persists, please refer to Section 2.7.

If the EMS system becomes unresponsive during any interaction with the operator, please follow the steps below to recover from that state:

- Make sure that all servers you are using are switched on and working, and that all network equipment (if any) is switched on and working.
- Make sure that all client computers you are using are switched on and working.
- For any problems encountered during installation, make sure you followed the installation and configuration manual for both the server and the client computers.
- Try to log in to the server you are using with the default administrator account. Open Task Manager (press Ctrl+Alt+Delete and click on the

Start Task Manager button). Under the Process tab, make sure that no process that begins with the name DVS occupies 0% of CPU usage. If so, select that process and click on the End Process button at the bottom. Repeat the process, if necessary.

- Try to log in to each client computer you are using with the default administrator account.
- Open the EMS EED client application. Ensure that the entered EMS database and network settings, as well as the application user accounts, are correct. Check to see if the election event properties have been entered correctly. Create and then ensure the System and Audio Log reports are correct.
- Open the EMS RTR client application. Ensure that the entered EMS database and network settings are correct. Ensure the transfer point parameters are correct. Reboot the server and try again reboot the defected client computer(s) and try again.
- If the problem persists, please refer to section 2.7.

2.5 Parts and Materials

Parts and materials for system maintenance include:

- Microfiber cloths for removing dust
- Small amount of 70% (or greater) isopropyl alcohol for cleaning stubborn marks that cannot be removed with a cloth
- Storage media (CD or DVD ROM) for performing system updates

2.6 Maintenance Facilities and Support

Depending on configuration, please refer to TDP 2.02 - *Democracy Suite® System Overview* or section 2.2 Direct Server Maintenance for details.

Please be aware that Dominion Voting Systems recommends that one unit of each hardware device or component be kept on hand as a spare for repair purposes during periods of system operation.

2.7 Operations Support

2.7.1 Requesting Support

When requesting support from Dominion Voting Systems, customers can use the following methods. The options listed below appear in order of efficiency.

1. Enter your issue directly into Dominion Voting's support database via <http://online.dominionvoting.com/customerportal/>
2. Email the issue directly to Dominion Voting's support team. In the email message, the following details are mandatory:
 - Name
 - Contact telephone with extension
 - Location
 - Detailed description of the problem

The support technician will record the issue in Dominion Voting's Customer Portal database and either resolve it on the spot or assign it to an appropriate resource for action. Once Dominion Voting's support team creates the ticket in the Customer Portal system, an email message will automatically be sent to the customers' primary contact email address notifying them that the ticket has been created.

2.7.2 Prioritizing Support (Impact Levels)

All support request/issues are dealt with according to their priority, which is determined depending on their impact levels.

2.7.3 Impact Level 1

Impact Level 1 is the highest priority support situation and is assigned when one or more of the following conditions occur:

- Multiple users (two or more) are directly affected.
- The IT resource cannot function as designed and installed.
- Problem has a critical impact on the customer's tasks.
- A temporary workaround, alternative, or circumvention is not available.

The first Dominion Voting response must occur within one hour of the service interruption. The Dominion Voting support team will establish definitive contact with the customer's primary contact and maintain contact throughout the interruption. The maximum time for resolution is targeted at four elapsed hours (work will continue after regular working hours or on weekends), or as specified in the customer contract covering the requested service.

2.7.4 Impact Level 2

Impact Level 2 describes a medium priority support situation and is assigned when some or all of the following conditions occur:

- Limited (two or less) users are directly affected.
- IT resource is available with degraded performance and/or is difficult to use.
- A temporary workaround, alternative, or circumvention is available.
- The loss may restrict function and have some operational impact; however the situation is not critical.

Dominion Voting will respond within 1 working day. The maximum time targeted for resolution is 40 working hours from the time of Dominion Voting's initial response. Dominion Voting will escalate the problem to the next level and group manager if the targets for response and resolution are not met.

2.7.5 Impact Level 3

Impact level 3 describes a low priority support situation, and is assigned when some or all of the following conditions occur:

- The problem resolution specifies that a system component or software upgrade is necessary, or a design change is required.
- The customer has requested additional information pertaining to a problem or a feature of the system or service.

Dominion Voting will first respond within 2 working days. There is no target time for a resolution, but a reminder email will be issued to the assignee once the ticket has been assigned, as well as every time the status of the ticket changes as it is acted upon.

REVISION HISTORY

Rev.	Date	Author	Summary
3	04-18-2019	tijana.todorovic	Resolving discrepancies for 5.11-CO
2	04-17-2019	tijana.todorovic	Resolving discrepancies for 5.11-CO
1	03-06-2019	tijana.todorovic	Branched for 5.11.

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VVSG TRACE LIST

VVSG Criteria	Pg.
VVSG 1.0 Vol II - 2.9.1	1
VVSG 1.0 Vol II - 2.9.1	2
VVSG 1.0 Vol I - 2.1.1.1h	4
VVSG 1.0 Vol II - 2.9.2	4
VVSG 1.0 Vol II - 2.9.2.1	4
VVSG 1.0 Vol I - 2.9.2.2d	8
VVSG 1.0 Vol I - 2.9.5	8
VVSG 1.0 Vol II - 2.9.2.2a, b, c, f	9
VVSG 1.0 Vol II - 2.9.2.3	9
VVSG 1.0 Vol II - 2.9.2.2f	10
VVSG 1.0 Vol II - 2.9.4.1	11
VVSG 1.0 Vol I - 2.1.1.1h	11
VVSG 1.0 Vol I - 4.3.5e	11
VVSG 1.0 Vol II - 2.9.5	11
VVSG 1.0 Vol I - 2.9.2.1	12

End of Document



Mesa County
HILLING ID: NSeptember191,2021 10:14 PM
Colorado
CASE NUMBER: A63D93E3BEC4968
ICW300914

Voting Systems

**Report #1 with
Forensic Examination and Analysis**

EXHIBIT
F

September 2021

Mesa County, Colorado, Voting Systems

**Report #1 with
Forensic Examination and Analysis**

15 September 2021

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EXECUTIVE SUMMARY

This report documents initial findings in an ongoing forensic examination of the voting systems of Mesa County, Colorado, used in the November, 2020 General Election. These voting systems represent a portion of overall election systems infrastructure, and this report is limited to the findings of an ongoing investigation. The findings in this report were prepared by the cyber forensic expert retained to advise the County Clerk pursuant to her duties as the county's Chief Election Official as part of the impacted parties' legal team.

Federal law requires the preservation of election records – which includes records in electronic or digital form – for twenty-two months after an election. Colorado law requires the preservation of election records for an additional three months beyond the Federal requirement. The obligation to ensure the integrity of elections and that all election records are preserved pursuant to federal and state law falls to the elected Clerk & Recorder. This report, the first of several, is based on examination of the data obtained from forensic images of the Dominion Voting System EMS server last used in Mesa County for the November, 2020, election, images taken in furtherance of the preservation requirements of federal and state law. Based upon information received by the Clerk's office from various sources in early 2021, the Clerk became concerned that the voting system modifications might jeopardize these preservation and other legal requirements under the responsibility of the County Clerk. For this reason the Clerk ensured a full backup of election records from the County voting systems, both before and after the software modification performed by the vendor and the Secretary of State on May 25-26, 2021, just six months after the November, 2020, election.

Forensic examination¹ found that election records, including data described in the Federal Election Commission's 2002 Voting System Standards (VSS) mandated by Colorado law as certification requirements for Colorado voting systems, have been destroyed on Mesa County's voting system, by the system vendor and the Colorado Secretary of State's office. Because similar system modifications were reportedly performed upon county election servers across the state, it is possible, if not likely, that such data destruction in violation of state and federal law has occurred in numerous other counties.

The extent and manner of destruction of the data comprising these election records is consequential, precluding the possibility of any comprehensive forensic audit of the conduct of any involved election. This documented destruction also undermines the conclusion that these Colorado voting systems and accompanying vendor and Colorado Secretary of State-issued procedures could meet the requirements of Colorado and Federal law, and consequently vitiates the premise of the Colorado Secretary of State certification of these systems for use in Colorado.

Two backup images, using forensic imaging methods, were obtained from the Dominion Voting Systems (DVS) Democracy Suite (D-Suite) Election Management System (EMS) Standard Server in Mesa County, Colorado. The first image was made of that EMS Standard Server in the D-Suite 5.11-CO version configuration, as used in the November, 2020 election. The second image was of the configuration of the EMS Standard Server in the D-Suite 5.13 version configuration, following the modification of the EMS Standard Server by a combined team of DVS vendor personnel and Colorado Secretary of State staff. The forensic information provided in this report is presented using screenshots from forensic analysts' systems running industry-standard forensics software tools. The report includes "before" and "after" screenshots from the forensic tool that shows the differences between the two backup images.

The forensic examination found that numerous logfiles had been deleted or overwritten. These logfiles are required to reconstruct the function of and events taking place on the the voting systems, and based upon information

¹ Many individuals and organizations, some public officials, have made recent claims that no audit performed nor examination conducted on elections or computer-based election systems can be legitimate or credible unless the examiners are "election experts" or accredited election auditors. There is no such thing as an "accredited election auditor," nor are there Federal standards or procedures to credential election auditors.

provided by legal counsel, must, by law, be preserved. By comparing filenames in the two images (before and after the Dominion update on May 25-26, 2021), examination and analysis identified a total of 28,989 files that were deleted. During a software update, some replacement of program files and their related content is normally expected. However the examination found that 695 log and event log files necessary for the determination of election integrity were deleted.

Based upon information provided by legal counsel, Colorado law (Colorado Revised Statute (CRS) § 1-5-601.5) requires that, prior to use in Colorado elections, electronic and computer-based voting systems be certified by the Colorado Secretary of State. This certification is based on the systems' compliance with the requirements of the Federal Election Commission's 2002 Voting System Standards (VSS), verified by their testing by a Federally-accredited (by vote of the U.S. Election Assistance Commission (EAC)) Voting System Testing Lab (VSTL). While several iterations of newer Voluntary Voting System Guidelines (VVSG) have been issued by the EAC, Colorado's statutory requirement is for compliance with 2002 VSS, which states:

"Election audit trails provide the supporting documentation for verifying the accuracy of reported election results. They present a concrete, indestructible archival record of all system activity related to the vote tally, and are essential for public confidence in the accuracy of the tally, for recounts, and for evidence in the event of criminal or civil litigation."

The relevant sections of the VSS are cited in Appendix E.

These statutory requirements establish that voting systems are required to generate and preserve, as critical to the ability to determine and reproduce the conditions and details of election conduct using these systems, logfiles of all system functions, including normal activity, connectivity, file and data access, operator- and automated-processes, and errors. Logfiles are critical to the ability to detect improper operation, including the ability to detect malicious intrusions as well as other improper activities and conditions, and configuration changes that could enable alteration of the actual vote count.

Assuming this information to be correct, this forensic examination found that a substantially large number of these requirements have not been met. This examination also found that destruction of critical logfiles has occurred. This destruction is not incidental or minor but is extensive.

The purpose of this initial report is to document these findings and present preliminary evidence demonstrating unacceptable conduct and system defects revealed by the examined images, as necessary for the Chief Election Official to discharge her statutory obligations. The facts and resultant findings support the conclusions that:

- 1) Election-related data explicitly required to be preserved, as stated in the 2002 VSS criteria referenced in this section, have been destroyed in violation of Federal and State law, and
- 2) Due to non-compliance with the 2002 VSS requirements, these voting systems and accompanying vendor-provided, Colorado Secretary of state-approved procedures cannot meet the certification requirements of the State of Colorado, and should not have been certified for use in the state.

Comprehensive investigation is required to determine whether these critical failures are the result of malicious intent or negligence, and to what extent the systems may have been compromised or subjected to unauthorized access or operation prior to, during, and after election use. That comprehensive investigation *is beyond the scope of this report*. Subsequent reports will address these issues in detail.

Evidence supporting all of these findings is documented in this report.

Introduction

Election officials, including Secretaries of State, are obligated by law to ensure the integrity of all elections, including the transparency required for citizens to verify that integrity themselves. Modern electronic voting systems are marketed as an efficient solution to streamline the voting process and allow for automated collection, tabulation, and reporting of election results, but the efficiency they promise comes at a cost.

The necessary measures and safeguards to ensure the integrity of the systems and their operation against a severe, mounting and ever-evolving threat from sophisticated nation-state and non-nation-state actors are so complex and dynamic as to outpace the limited capabilities and resources of our government, at all levels. While minimal security safeguards may be within government capacity, modern computer-based voting systems are extremely complex and difficult to secure, even for cybersecurity experts, and since voting systems are not under the direct control of the Federal government's top security experts, any government assurances about the sufficiency of those safeguards can serve only to mislead citizens and policy-makers. Even critical defense systems, relentlessly monitored and defended by highly-trained teams using costly, sophisticated tools, are at risk and are frequently compromised, sometimes before procurement. Earlier generations of voting systems relied on simple, human-scale safeguards, for example "air gaps"—that is—to have no wired network connection to the system. But miniaturized wireless communication technologies and networks have proliferated, with billions of wireless devices installed or in use, and malicious actors have developed sophisticated attacks to bypass air gaps, compromise every kind of hardware, firmware, and software, often before they even come into customer or user possession, and to move laterally through networked systems, often undetected. Supply-chains for these systems, from the initiation of the design of integrated circuits and electronic components, most manufactured overseas with little U.S. insight or oversight, through the fabrication, testing, assembly, integration, and operation of these complex composite systems, are vulnerable and untrustworthy for critical functions of government and lucrative economic and national security targets. For all these reasons logfiles, such as those that have been deleted by the Dominion "Trusted Build" update must be preserved to document the complete operation of the computer system and voting applications, and to be able to verify the authenticity, integrity and accuracy of the vote.

The feature size of individual circuits in the chipsets and components of our voting system computers is at the nanoscale, smaller than the smallest known virus particle, and less than 3/10,000ths of the width of a human hair. So we have lost the ability, if we ever had it, to visually verify what is really happening, even at the physical level, in our computer-based voting system. Regardless of how the systems appear to be configured to authorized users and poll-watchers, the functionality and connectivity in these computers can be enabled and modified remotely and wirelessly, or by the introduction of embedded codes on scanned paper, or triggered by specific unforeseeable and indiscernible predetermined software and hardware conditions, or by specific timing events, or by geographic location, or by the proximity of other devices or combinations of any of these means.

For example, some Colorado voting systems ordered as specified by the voting system vendors, from foreign manufacturing and assembly facilities, have included "Integrated Dell Remote Access Controllers (IDRAC)," which are designed to allow "out-of-band" remote management of those systems, meaning that the computers are explicitly equipped to be controlled by remote automated programs or by individuals other than those logged in locally. Through the IDRAC, voting systems might have any aspect of their Basic Input/Output System (BIOS), operating system, or applications controlled or modified, including the addition and deletion of user accounts, the enabling of communications components like wireless networking cards, and the modification, installation, removal or configuration of software and settings. Like the inclusion of multi-band wireless networking cards, similarly specified and ordered for Colorado voting systems by the vendor, there is no excuse or rational justification for the inclusion of components like these, and the fact that the entirety of U.S. voting system regulatory processes and institutions can apparently neither detect, note, nor address these gross vulnerabilities eviscerates the notion that our computer-based voting systems have been secured.

Faced with incredible miniaturization, the importance of logfiles which are records of operation of a computer system, are more important than ever in managing this technology. When the computer is part of a national critical infrastructure, these operational records become essential, not only for troubleshooting or security alone, but for the integrity of the system itself as a component of the National Critical Infrastructure.

For the purposes of this document and ensuing discussion, two terms are defined to differentiate and clarify the evidentiary findings. *Election Data* is all information regarding Ballot Design, Ballot Marking, Electronic scanning of completed ballots, interpretation of the intention of each voter's choice, including human, machine generated or programmatic adjudication in the event that the election system is unable to determine conclusively the correct vote input from any specific ballot, tabulation of the actual vote including the databases used to actually contain the raw vote totals, scanned ballot images and Voter Registration and Voter identification information associated with any specific election, as well as the actual vote totals. This includes a complete record of any realtime changes in databases resident in the cloud such as voter registration data. *Election-Related Data* includes all of the computer log and configuration data that document the complete configuration state and operation of the entire computer system and infrastructure upon which Election Software is executed, as well as the operating system of devices that store log and election data such as Network Attached Storage (NAS). Also included in Election-Related data are logs and configuration of network Routers, Firewalls, Intrusion Detection Systems, Intrusion Prevention Systems, and other network security devices, including VPNs and more².

Both Election Data AND Election-Related Data must be preserved as "Election Records" under the law, and this is broadly addressed in both the 2002 VSS and the EAC's successor versions of VVSG.

Securing computer systems is a non-trivial task. It involves a litany of processes, including, but not limited to:

- Engineering systems with a focus on security
- Building systems to meet published high-security standards and applicable regulations
- Patching systems to ensure that vulnerabilities are removed
- Securing networks to ensure highly controlled access
- Logging of all communications, processes, access, system modifications
- Auditing of systems and logs regularly to ensure ongoing compliance
- Adequate training and certification for engineers, administrators, and system users
- Adherence to Industry Best Practices, for example, emphasis on password strength and configured security and group policies

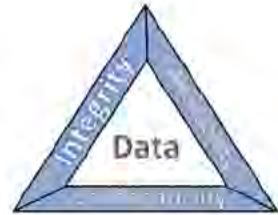
These, among other measures, will help to ensure what is known as the CIA triad. The CIA triad represents the three pillars of information security: confidentiality, integrity, and availability, as follows:

² Log and configuration examination of not only the computer system(s) but also all network systems are critical to forensic examination. Compromise of any unrelated information (e.g. plain-text configuration data containing normally-encrypted passwords) can be easily prevented, so long as simple, quick forensic examiner and cyber professional industry standards are used to obfuscate private and sensitive data from the network device files.

Confidentiality – preserving authorized restrictions on information access and disclosure, including means for protecting personal privacy and proprietary information

Integrity — guarding against improper information modification or destruction and ensuring information non-repudiation and authenticity

Availability – ensuring timely and reliable access to and use of information



Failure in any of the three pillars can and generally will result in a compromise of the system. Failure in the integrity component can have dire consequences for public perception, election results, the future of our government and our country.

Industry-standard forensics analysis tools were applied to the forensic examination.

Information was forensically evaluated using backup images taken from a Mesa County Election server configured for DVS D-Suite 5.11-CO on Sunday, May 23, 2021, before its modification by Dominion Voting Systems and the Colorado Secretary of State to DVS D-Suite 5.13, and again on Wednesday, May 26, 2021, after the update had been applied. This server was the primary system that was used to process election data in Mesa County for the 2020 general election. The EMS server configuration and administrative standards were prepared by Dominion Voting Systems (DVS), running a combination of COTS and proprietary DVS software, and certified for use by the Colorado Secretary of State. Our conclusions include determining that this system not only failed to meet any reasonable standard or statutory requirement for cybersecurity but was also subject to removal of critical information (data destruction).

Our findings include serious irregularities that resulted in the loss of data integrity on the server, including election data and election-related data.

LEGAL REFERENCES

Several Federal and Colorado state legal standards apply to the preservation and definition of election records, applicable to the data generated by and resident on voting systems. Beginning with 52 USC §20701, retention and preservation of records and papers by officers of elections; deposit with custodian; penalty for violation, which states:

Every officer of election shall retain and preserve, for a period of twenty-two months from the date of any general, special, or primary election of which candidates for the office of President, Vice President, presidential elector, Member of the Senate, Member of the House of Representatives, or Resident Commissioner from the Commonwealth of Puerto Rico are voted for, all records and papers which come into his possession relating to any application, registration, payment of poll tax, or other act requisite to voting in such election, except that, when required by law, such records and papers may be delivered to another officer of election and except that, if a State or the Commonwealth of Puerto Rico designates a custodian to retain and preserve these records and papers at a specified place, then such records and papers may be deposited with such custodian, and the duty to retain and preserve any record or paper so deposited shall devolve upon such custodian. Any officer of election or custodian who willfully fails to comply with this section shall be fined not more than \$1,000 or imprisoned not more than one year, or both.

In addition to 52 USC §20701, multiple sections of Colorado Revised Statutes (CRS) appear applicable, including:

CRS 1-5-601.5. Compliance with federal requirements (Effective until July 1, 2022)

All voting systems and voting equipment offered for sale on or after May 28, 2004, shall meet the voting systems standards that were promulgated in 2002 by the federal election commission. At his or her discretion, the secretary of state may require by rule that voting systems and voting equipment satisfy voting systems standards promulgated after January 1, 2008, by the federal election assistance commission as long

as such standards meet or exceed those promulgated in 2002 by the federal election commission. Subject to section 1-5-608.2, nothing in this section shall be construed to require any political subdivision to replace a voting system that is in use prior to May 28, 2004.

CRS 1-7-802. Preservation of election records

The designated election official shall be responsible for the preservation of any election records for a period of at least twenty-five months after the election or until time has expired for which the record would be needed in any contest proceedings, whichever is later. Unused ballots may be destroyed after the time for a challenge to the election has passed. If a federal candidate was on the ballot, the voted ballots and any other required election materials shall be kept for at least twenty-five months after the election.

1-13-716. Destroying, removing, or delaying delivery of election records

(1) No person shall willfully destroy, deface, or alter any ballot or any election records or willfully delay the delivery of any such ballots or election records, or take, carry away, conceal, or remove any ballot, ballot box, or election records from the polling location or drop-off location or from the possession of a person authorized by law to have the custody thereof, or aid, counsel, procure, advise, or assist any person to do any of the aforesaid acts.

(2) No election official who has undertaken to deliver the official ballots and election records to the county clerk and recorder shall neglect or refuse to do so within the time prescribed by law or shall fail to account fully for all official ballots and other records in his charge. Informality in the delivery of the ballots and election records shall not invalidate the vote of any precinct if such records are delivered prior to the canvassing of the votes by the county board of canvassers.

(3) Any person who violates any provision of this section is guilty of a misdemeanor and, upon conviction thereof, shall be punished as provided in section 1-13-111.

And several sections of the Code of Colorado Regulations appear applicable, including:

8 CCR 1505-1, Rule 21, 21.4.2: All voting systems must meet the requirements of the 2002 Voting Systems Standards, parts 5 – 7 of article 5 of title 1, CRS, as amended, and this Rule 21.

FORENSIC EXAMINATION AND ANALYSIS REPORT

FORENSIC ANALYSIS

SYSTEM IDENTIFICATION

The server that was analyzed is capable of operating on a small local area network (LAN). The network consists of several systems, including servers and workstations running in a non-virtualized environment. The server that we evaluated was named EMSERVER. It is running the Microsoft Windows Server 2016 Standard operating system.

The forensic evaluation and reviews were based upon a forensic image archive collected from the Mesa County Dominion EMS Server. The Before and After forensic images were collected from the same server and same hard drive, as documented below, from the actual acquisition. The serial number of the hard drive shown in each collection data set verifies the data origin to be the same physical device.

Figure 1 – EMS Server (5.11-CO) Image Attributes Before

Created By AccessData® FTK® Imager 4.2.0.13

Case Information:

Acquired using: ADI4.2.0.13

Case Number: 052321

Evidence Number: 00003

Unique description: EMSERVER

Information for F:\EMSSERVER\EMSSERVER:

Physical Evidentiary Item (Source) Information:

[Device Info]

Source Type: Physical

[Drive Geometry]

Cylinders: 121,534

Tracks per Cylinder: 255

Sectors per Track: 63

Bytes per Sector: 512

Sector Count: 1,952,448,512

[Physical Drive Information]

Drive Model: DELL PERC H730 Adp SCSI Disk Device

Drive Serial Number: 00222e64128c016e1d004fc54220844a

Drive Interface Type: SCSI

Removable drive: False

Source data size: 953344 MB

Sector count: 1952448512

[Computed Hashes]

MD5 checksum: 3d7cf05ca6e42db765bf5c15220c097d

SHA1 checksum: eab06a7ea23586de2746b9142461717e075f5c9f

Image Information:

Acquisition finished: Sun May 23 2021

Segment list:

F:\EMSSERVER\EMSSERVER.E01

Figure 2 - EMS Server (5.13) Image Attributes After

Created By AccessData® FTK® Imager 4.2.0.13

Case Information:

Acquired using: ADI4.2.0.13

Case Number: 052621

Evidence Number: 00002

Unique description: EMSERVER_v2

Information for E:\Mesa\EMSSERVER_v2:

Physical Evidentiary Item (Source) Information:

[Device Info]

Source Type: Physical

[Drive Geometry]

Cylinders: 121,534

Tracks per Cylinder: 255

Sectors per Track: 63

Bytes per Sector: 512

Sector Count: 1,952,448,512

[Physical Drive Information]

Drive Model: DELL PERC H730 Adp SCSI Disk Device

Drive Serial Number: 00222e64128c016e1d004fc54220844a

Drive Interface Type: SCSI

Removable drive: False

Source data size: 953344 MB

Sector count: 1952448512

[Computed Hashes]

MD5 checksum: 52861d5a7750ab535a9d5f7277469c10

SHA1 checksum: 1bf8f22edb37f72bb29428a591046a1f64279a3f

Image Information:

Acquisition finished: Wed May 26 2021

Segment list:

E:\Mesa\EMSSERVER_v2.E01

Two backup images were obtained, using forensic imaging methods, from the Dominion Voting Systems (DVS) Democracy Suite (D-Suite) Election Management System (EMS) Standard Server in Mesa County, Colorado. The first image was made of that EMS Standard Server in the D-Suite 5.11-CO version configuration, as used in the November, 2020 election on May 23, 2021. The second image was of the configuration of the EMS Standard Server in the D-Suite 5.13 version configuration, following the modification of the EMS Standard Server by a combined team of Dominion Voting System vendor personnel and Colorado Secretary of State (SecState) staff, on May 26, 2021. A forensic image (forensic copy) is a bit-by-bit, sector-by-sector duplicate of a physical storage device using specialized hardware and software; it is a much more comprehensive representation of the state and configuration of the imaged system than could be obtained using simple file backup methods. The images include all files, folders, and unallocated, free, and slack space. These forensic images include not only all the files visible to the server operating system but also deleted files and fragments of files left in the slack and free space but every digital bit of data present on the storage medium, in this case, a SCSI hard disk. When forensic images are acquired, a hash function, also known as a Message Digest, is computed. This hash can be used at any time to validate the integrity of the image to ensure that it has not been edited, modified, or changed in any way. The hash function result from the acquisition of data appears in the text above but also appears inside each respective archive and authenticates the data by demonstrating that it has not changed since it was acquired.

These two images were evaluated to gather technical information, including the integrity of the data stored on the system. No effort was made to reverse-design, de-compile or reverse-engineer the Dominion software. Configuration, which is relevant to the operation of the system, was examined to determine whether improper settings could allow undesirable results and were found to contain such errors. Results relevant to this investigation are documented below. Additional supporting documentation can be found in the appendixes. They include directory listings for many of the directories seen in the screenshots and contain complete filenames, full path names where the files are located, and file hashes.

We have included screenshots that can be used to review and verify these findings. These screenshots were obtained from the forensic images of the Dominion server.

AUTHENTICITY AND CHAIN OF CUSTODY

Digital chain of custody is the record of preservation of digital evidence from collection to presentation in the court of law. This is an essential part of the digital investigation process. The chain of custody is probative that the digital evidence presented to the court remains as originally collected, without tampering. The two images analyzed in this report were obtained through AccessData FTK Imager 4.2.0.13. The serial number on the EMS Server drive on both images match, thus establishing that both images were taken from the same physical drive. I have reviewed the documented chain of custody for both images and have determined that the chain of custody is complete from the forensic operator utilizing FTK Imager through the source from which I directly received these images. (Because of the pending civil litigation and criminal investigation, the written documentation remains in the custody of counsel for later introduction in court proceedings and thus cannot be released as part of this report.) Further confirmation that these are genuine images from the Mesa County EMS Server has been provided by the Colorado Secretary of State's office. See:

<https://www.sos.state.co.us/pubs/newsRoom/pressReleases/2021/PR20210817MesaCounty.html>

FINDINGS

Overview of System Data Sources

Figure 3 – EMS Server (5.11-CO) System Data Sources Before

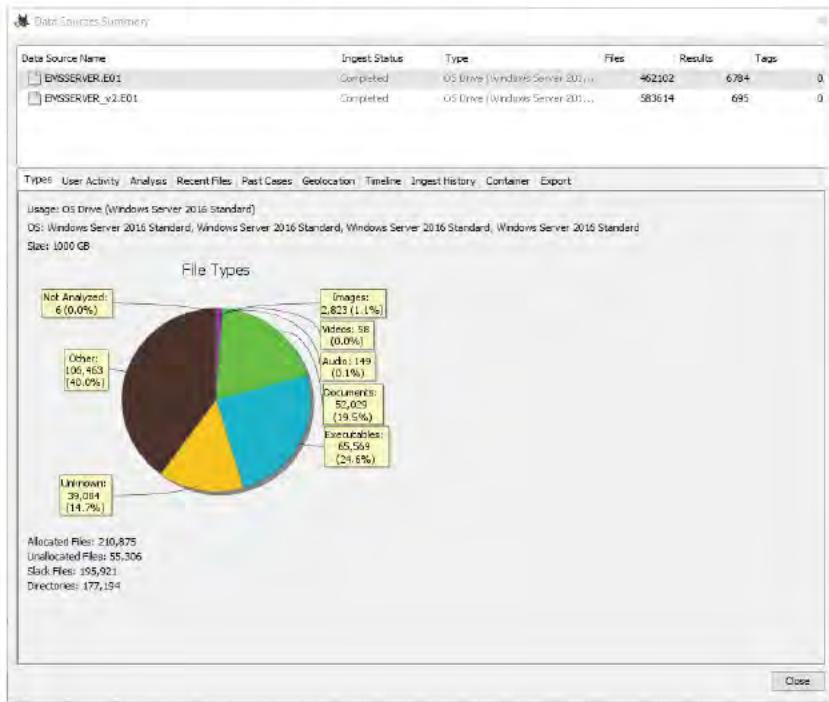
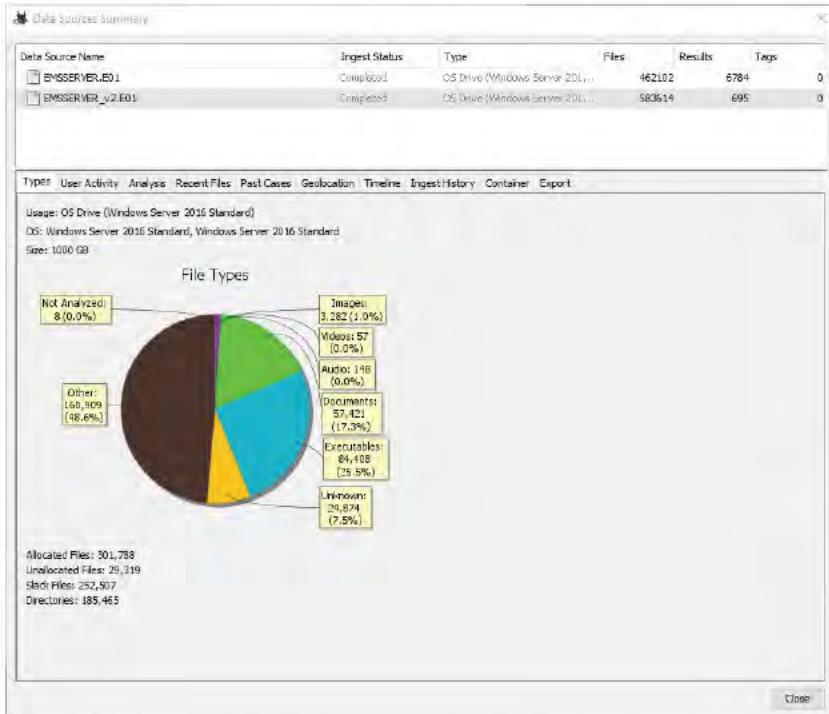


Figure 4 - EMS Server (5.13) System Data Sources After



Server Disk Partition Structure Overwritten

Purpose: The disk partition structure is the structure of how the hard drive is divided up.

Figure 5 - EMSERVER (5.11-CO) Disk Partition Structure Before

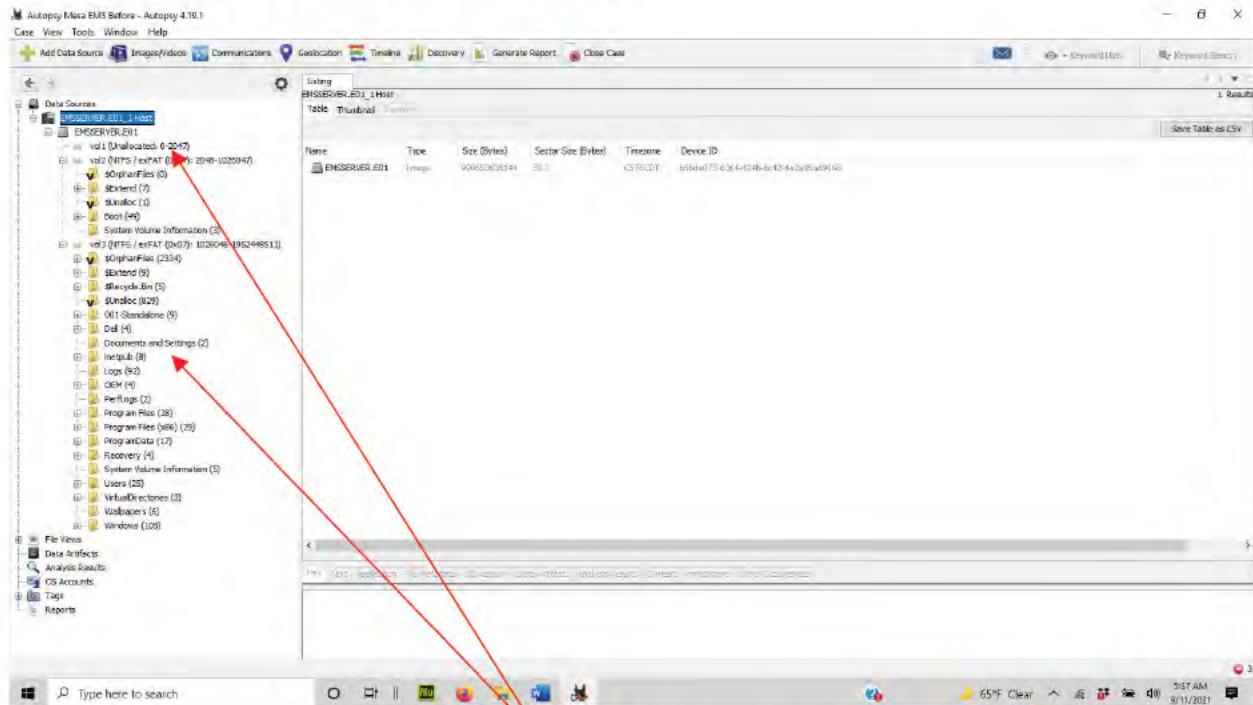


Figure 6 - EMSERVER (5.13) Disk Partition Structure After

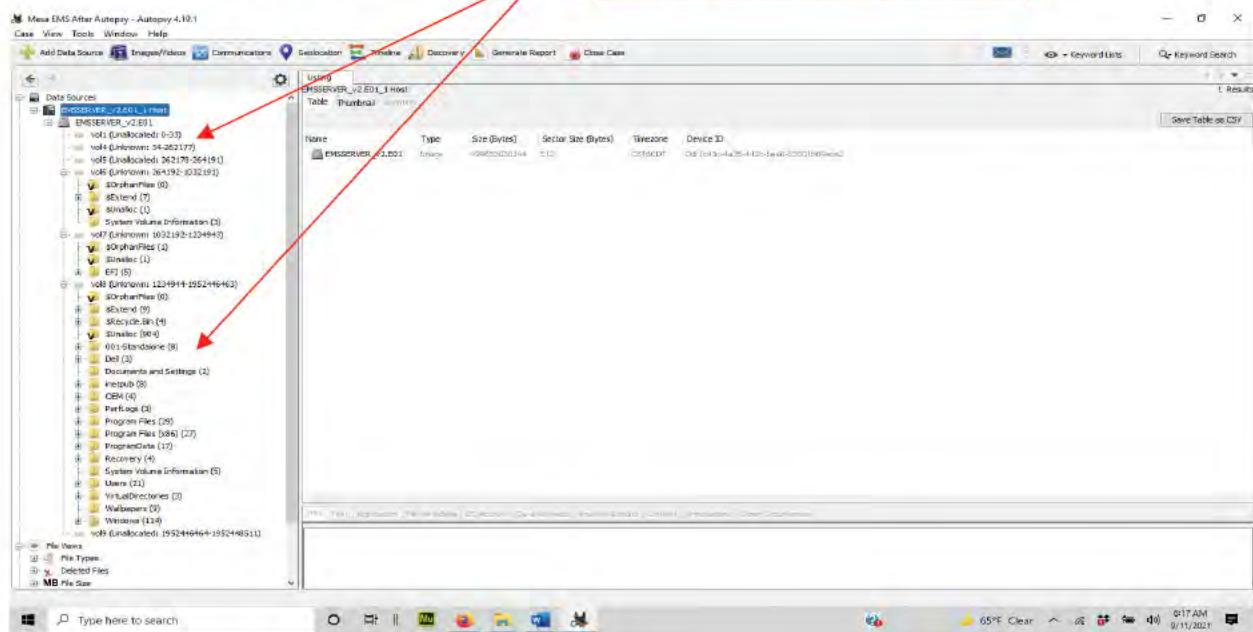
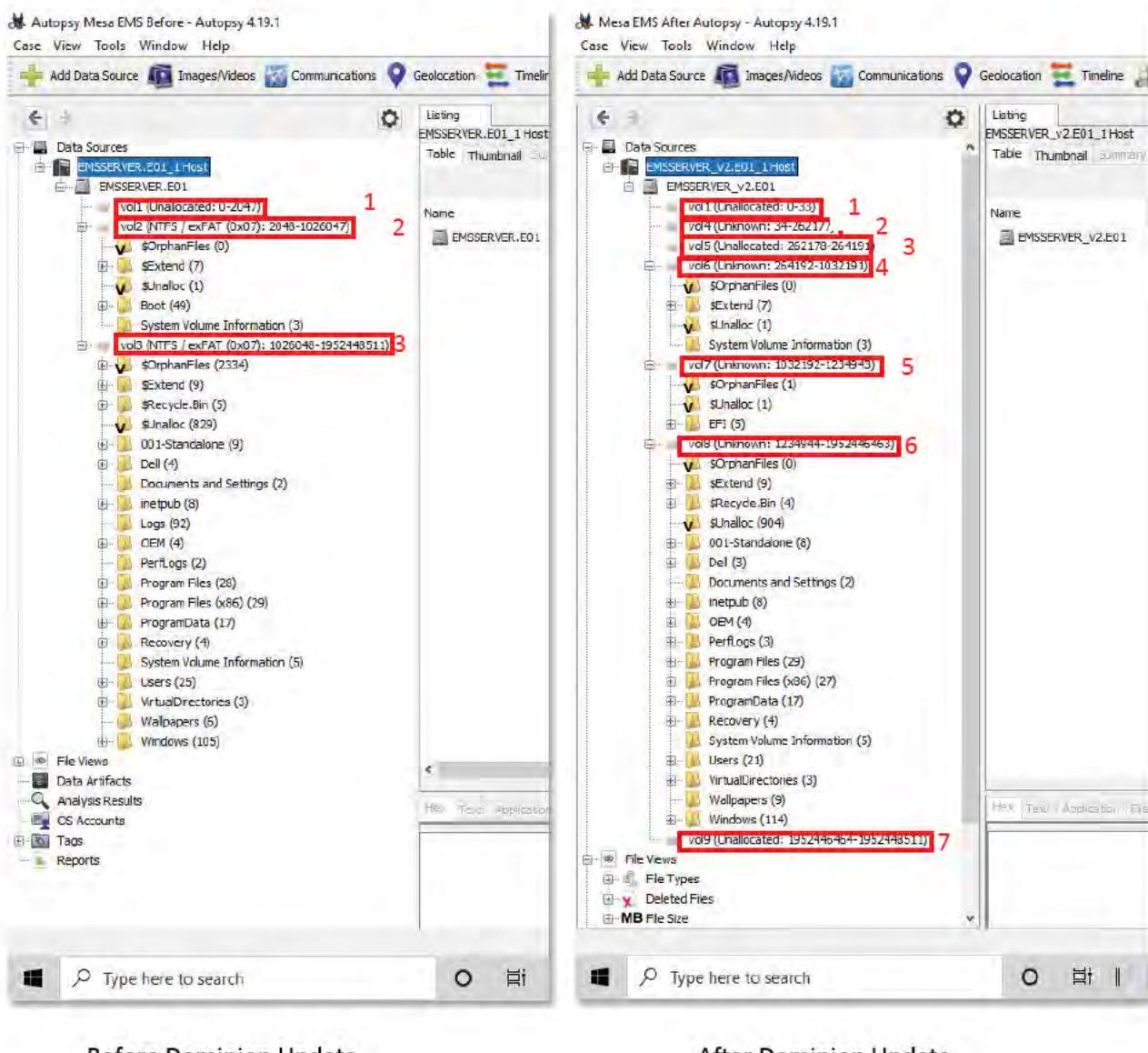


Figure 7 - Server Disk Partition and Directory Changes



Computer hard disk drives are data storage devices that must be prepared before use – specifically, they must be partitioned into logical disk volumes and then formatted. Partitioning a hard disk drive is the equivalent of scoring horizontal and vertical rule lines onto blank paper, and then numbering each line, preparing that paper for the orderly recording and look-up of information. A disk is partitioned to organize information into sets of related data. A partition creates a logical drive, C:, D:, E:, etc., that the Master Boot Record (MBR) or Globally Unique Identifier (GUID) Partition Table, which are like maps of the partitioned and formatted memory storage locations on the hard drive, can then use to write and read stored data.

Creation of such a partition, if previous partitions are not preserved, destroys the “map” of underlying data and data locations when the partition is formatted. The previous partition data is then only recoverable by forensic techniques, and is vulnerable to complete destruction if overwritten by data stored according to the new partition “map.” Note that in the before image above, each disk partition (Labeled “volX,” e.g. “vol1,” for “volume”) is identified together with the addresses of the beginning block and ending block for each volume.

By comparing the images, it is evident that the disk was re-partitioned, reformatted, and the previous data map completely destroyed by overwriting it with new data, rendering the prior data (mostly) unrecoverable.

Forensic examination of the system can reveal remnants of deleted data. When a computer deletes a file, it does not erase the data; it merely changes the first character of the filename to a non-printable character recognized by software that accesses the disk. This first character tells the operating system to no longer display the file as it is marked as a deleted file, and the space occupied by the disk is marked as reusable.

Each block on the disk is the smallest unit of disk space that can be used. The size of all blocks on the disk are determined when the disk is formatted. The smallest disk block size in common use is 512 bytes. Even if a file only occupies 50 bytes of disk space, the entire 512 byte block is marked as "in use".

If a file of 500 bytes is written to the disk, it occupies one block of disk space, with the last 12 bytes (on a newly formatted disk) each containing the numeric value zero (0). If this file is then deleted, and a file of 50 bytes is written to the same disk block, the first 50 bytes of the block contain the new file, and the next remaining 450 bytes of the disk block contain the data from the deleted file that previously occupied the disk block (followed by the 12 null (0) bytes of data). This data remnant is referred to as "File Slack Space" and is defined as any previous remnant data that remains on the disk and is not accessible via the operating system nor allocated as an accessible file.

Special forensic software is required to access file slack space, and the data it contains are partial remnants of previous system data. This data may be of use in forensic investigation, and forensic tools often identify it. File Slack is identified here for clarity and better understanding of these data.

Website Server Log Files Missing

Figure 8 - EMS Server (5.11-CO) Web Server Log Files Before

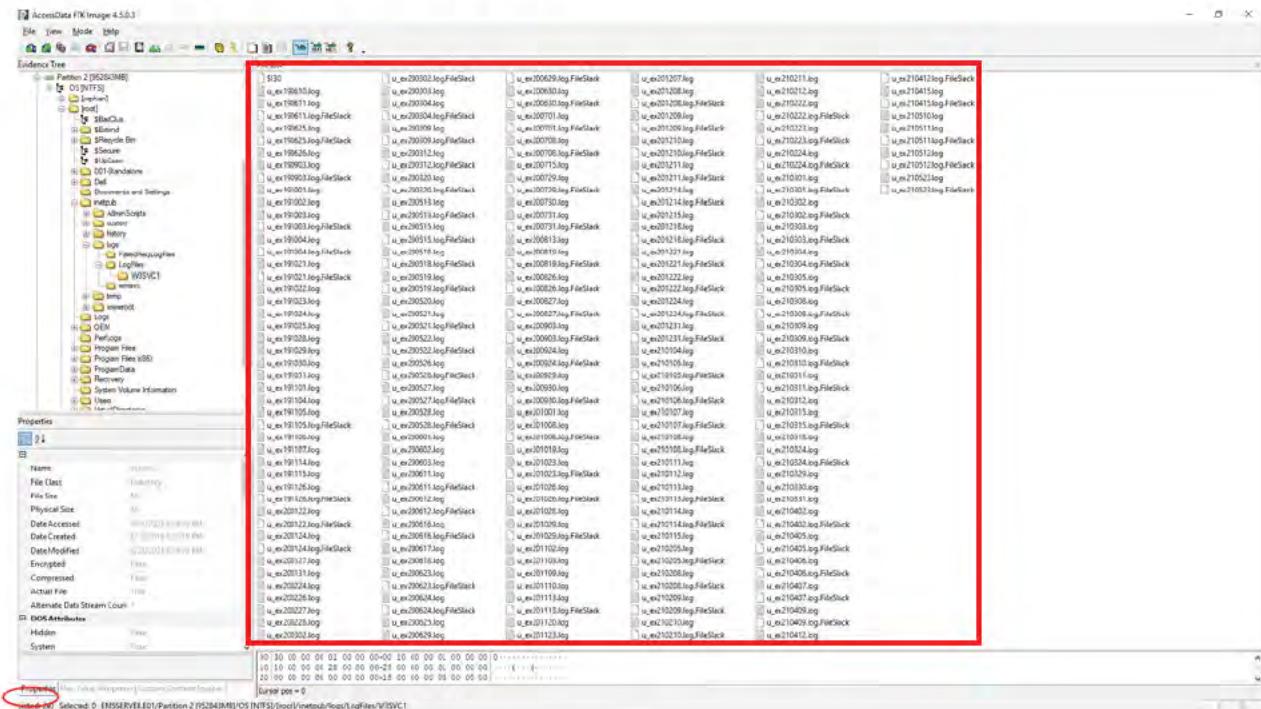
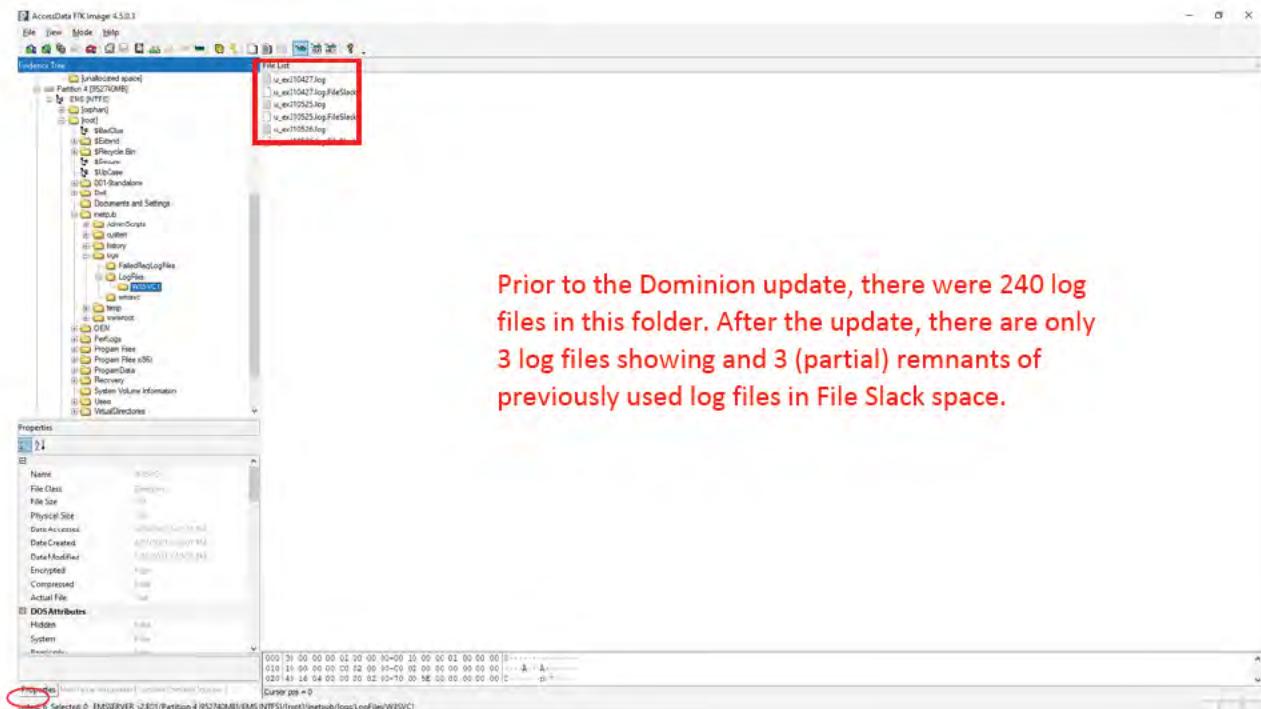


Figure 9 - EMS Server (5.13) Web Server Log Files After



A web server provides information to external web clients (via "web browser" software) using the HyperText Transfer Protocol (HTTP). This information can include both read and write access to databases and static presentation of information.

Some software system designs utilize an Ethernet network interface that is essentially an internal connection to itself, known as a *loopback* interface. Thus the presence of a Web Server, by itself, does not indicate a connection to an external ethernet interface. However, such an external connection may be indicated by the data within web server logs, which are stored by default in Microsoft operating systems with Microsoft Internet Information Services (IIS) installed, in a "logs" subfolder to the "inetpub" folder. That log data would include information regarding what web pages and data were accessed and whether it was accessed from within the server (loopback) or via an external network connection.

In these before and after views of the same web server directories, it is clear that the web server logs have been destroyed by or during the Dominion/CO Secretary of State DVS D-Suite 5.13 modification.

This log data is required to verify that the election system was not accessed by an external, unauthorized device, but due to the specific and unusual installation method for a critical computing system, chosen by Dominion Voting Systems and endorsed by the CO Secretary of State, these critical data files with election-related data have clearly been destroyed on the Mesa County EMS Standard Server.

Server Microsoft SQL Server Installation Log Files Missing

Purpose: The Database Management System that is used to hold actual ELECTION DATA – votes from each ballot. These log files contain information detailing the installation events of SQL Server.

Figure 10 - EMS Server (5.11-CO) MS SQL Server Installation Log Files Before

File List

Name	Size	Type	Date Modified
20190610_120251		1 - Directory	6/10/2019 6:50:40 PM
20190610_120309		1 - Directory	6/10/2019 6:16:56 PM
20190610_125107		1 - Directory	6/10/2019 6:55:01 PM
\$I00		4 - NTFS Index All...	6/10/2019 6:55:01 PM
Summary.txt		4 - Regular File	6/10/2019 6:54:59 PM

Properties

Name	Log
File Class	Directory
File Size	56

Figure 11 - EMS Server (5.13) MS SQL Server Installation Log Files After

File List

Name	Size	Type	Date Modified
20210427_181335		1 - Directory	4/27/2021 7:26:34 PM
20210427_181354		1 - Directory	4/27/2021 7:25:47 PM
20210427_182718		1 - Directory	4/27/2021 7:29:05 PM
20210427_183947		1 - Directory	4/27/2021 7:45:14 PM
\$I00		4 - NTFS Index All...	4/27/2021 7:45:14 PM
Summary.txt		4 - Regular File	4/27/2021 7:45:12 PM

The folders in Before are now completely missing.

Properties

Name	Log
File Class	Directory
File Size	56

These log files were created by installing the SQL Server Database Management System software and contain data regarding the Initial installation of the software. In a full forensic investigation, these data are part of the information that investigators require to determine a baseline from which can be determined what changes were made, by whom, when the changes were made, and much more on a system with properly configured log recording. Therefore, these data are Election Related as they document not only the configuration but its changes and are relevant to the Integrity of the election.

Figure 12 is an example of log content from the initial software setup. It tells us what (Microsoft) software executes, where data is stored (the G: drive), and it shows us what Registry values have been set during the installation. These are valuable should an investigation of an illegal computer intrusion occur, as they provide a record of the initial configuration during such an investigation.

Figure 12 - Example of Log File Content from EMS Server (5.11-CO) Before

AccessData FTK Imager 3.1.2.0

Evidence Tree

File List

Detail_LandingPage

- Summary_JMSSERVER_20190610.xmlFile...
- Settings_LandingPage.xmlFile...
- Settings_LandingPage...
- Detail_LandingPage.txt.FileStack
- Detail_LandingPage.txt
- \$300

2019-06-10 12:03:02 Sip: Completed Action: ProcessMediaFeatureConfigFileArguments, returns True

2019-06-10 12:03:02 Sip: Completed Action: ProcessFeatureConfigFileArguments

2019-06-10 12:03:02 Sip: Running Action: ProcessFeatureConfigFileArguments

2019-06-10 12:03:02 Sip: Completed Action: ProcessFeatureConfigFileArguments, returned True

2019-06-10 12:03:02 Sip: Completed Action: ValidateSettingAgainstScenario

2019-06-10 12:03:02 Sip: Running Action: ValidateSettingAgainstScenario

2019-06-10 12:03:02 Sip: Scenario: LandingPage

2019-06-10 12:03:02 Sip: Completed Action: ValidateSettingAgainstScenario, returned True

2019-06-10 12:03:02 Sip: Completed Action: FinalCalculateSettings

2019-06-10 12:03:02 Sip: Completed Action: ExecuteSetupFromInputSettings, returned True

2019-06-10 12:03:02 Sip: Completed Action: ExecuteSetupAfterExtensionsLoaded, returned True

2019-06-10 12:03:02 Sip: Running Action: LandingPage

2019-06-10 12:03:02 Sip: Landing Page action

2019-06-10 12:03:02 Sip: Starting Landing Page: Path = G:\x64\LandingPage.exe, Arguments = /ENU /MEDIASOURCE="S:\\"

2019-06-10 12:03:02 Sip: Completed Action: LandingPage, returned True

2019-06-10 12:03:02 Sip: SetupTelemetry: Writing Telemetry to Datastore

2019-06-10 12:03:02 Sip: SetupTelemetry: Closing Telemetry Session

2019-06-10 12:03:02 Sip: Sce: Attempting to create base registry key HKEY_LOCAL_MACHINE, machine

2019-06-10 12:03:02 Sip: Sce: Attempting to open registry subkey SOFTWARE\Microsoft\SMClient

2019-06-10 12:03:02 Sip: Sce: Attempting to get registry value MachineID

2019-06-10 12:03:02 Sip: Sce: Attempting to create base registry key HKEY_LOCAL_MACHINE, machine

2019-06-10 12:03:02 Sip: Sce: Attempting to open registry subkey Software\Microsoft\Microsoft SQL Server\120

2019-06-10 12:03:02 Sip: Sce: Attempting to get registry value CustomerFeedback

2019-06-10 12:03:02 Sip: Sce: Attempting to get registry value EnableErrorReporting

2019-06-10 12:03:02 Sip: SetupTelemetry: Telemetry has an active session with 2 events.

Custom Content Sources

Evidence file System Path file Options

New Remove Refresh All Update Index

EMSSERVER01/Partition 2 [952843MB]/05 (N1H5)/root/Program Files/Microsoft SQL Server/120/Setup Bootstrap/Log/20190610_120251/Detail_LandingPage.txt

Server Microsoft SQL Server Log Files Missing

Purpose: These log files keep track of events that occur within the SQL Server that manages the election databases.

Figure 13 - EMS Server (5.11-CO) SQL Server Log Files Before

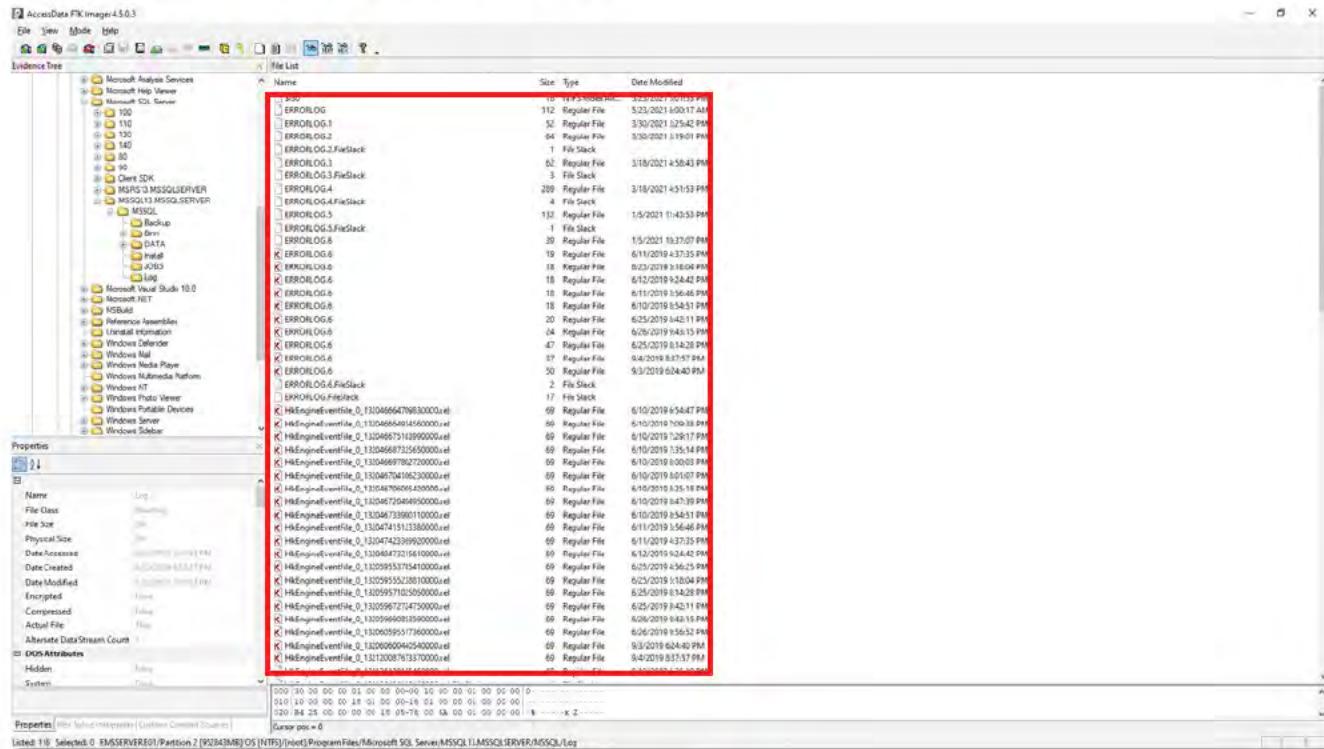
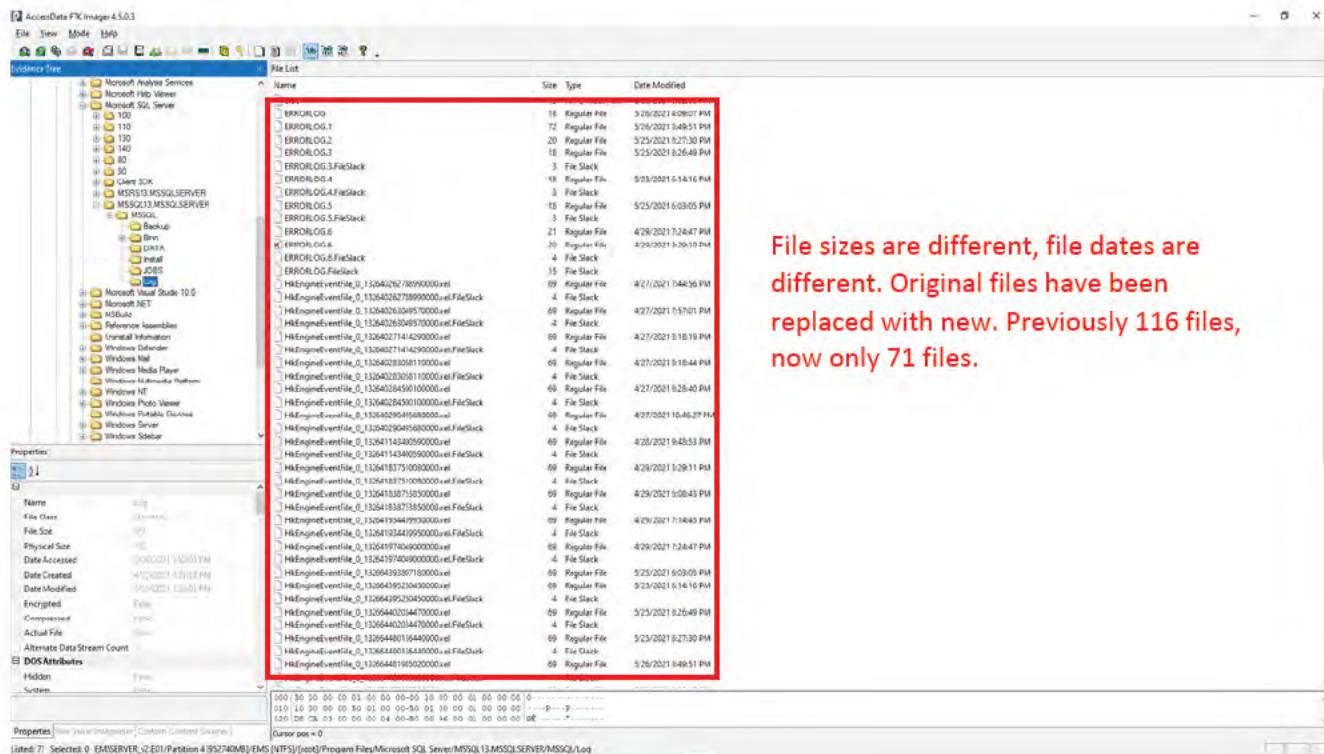


Figure 14 - EMS Server (5.13) SQL Server Log Files After



File sizes are different, file dates are different. Original files have been replaced with new. Previously 116 files, now only 71 files.

EMS Server Dell Server Updates Missing

Purpose: These log files track installation of updates made to the various components of the servers, including updates to software for a remote-access card.

Figure 15 - EMS Server (5.11-CO) Dell Server Update Files Before

Properties:

- Name: iDRAC-with-Lifecycle-Controller_Firmware_40T1C_WH64_2.63.60.61_A00.log
- Type: Regular File
- Size: 100
- File Class: log
- File Size: 100
- Physical Size: 100
- Start Cluster: 0
- Date Accessed: 6/15/2019 5:15:27 PM
- Date Created: 6/15/2019 5:04:04 PM
- Date Modified: 6/15/2019 5:15:31 PM
- Encrypted: False
- Compressed: False
- Actual File: A00
- Start Sector: 0
- DOS Attributes: 0x00000000

File List:

Name	Size	Type	Date Modified
\$00	4	NTFS Index Al...	6/15/2019 5:15:27 PM
BIOS_TRYX9_WH64_2.12.01.log	61	Regular File	6/15/2019 5:04:04 PM
BIOS_TYX9_WH64_2.12.01.log.FileStack	4	File Stack	
BIOS_TYX9_WH64_2.12.01.log.FileStack	11	Regular File	6/15/2019 5:15:31 PM
BIOS_TYX9_WH64_2.12.01.log.FileStack	23	Regular File	6/15/2019 5:07:30 PM
Driver-for-OS-Deployment_Application_WH1PH_WH64_18.12.04_A00.01.log	2	File Stack	
Driver-for-OS-Deployment_Application_WH1PH_WH64_18.12.04_A00.01.log.FileStack	23	Regular File	6/15/2019 5:06:22 PM
iDRAC-with-Lifecycle-Controller_Firmware_40T1C_WH64_2.63.60.61_A00.log	2	File Stack	
iDRAC-with-Lifecycle-Controller_Firmware_40T1C_WH64_2.63.60.61_A00.log.FileStack	40	Regular File	6/15/2019 5:05:43 PM
Network_Firmware_F3DN_WN64_0.0.1B.53.log	19	Regular File	6/15/2019 5:05:21 PM
Power_Firmware_BR0N_WN64_0.0.1B.53.log	2	File Stack	
Power_Firmware_BR0N_WN64_0.0.1B.53.log.FileStack	31	Regular File	6/15/2019 5:15:11 PM
SAS_RAID_Driver_T24W_WH64_6.0.04.00.00_A01_07.log	2	File Stack	
SAS_RAID_Driver_T24W_WH64_6.0.04.00.00_A01_07.log.FileStack	34	Regular File	6/15/2019 5:04:56 PM
SAS_RAID_Firmware_F07Y_WH64_25.5.00.00_A11_01.log	3	File Stack	
SAS_RAID_Firmware_F07Y_WH64_25.5.00.00_A11_01.log.FileStack			

File List (continued):

```

<InstallInstruction fileName="iDRAC-with-Lifecycle-Controller_Firmware_40T1C_WH64_2.63.60.61_A00.EXE" typeCode="IN64">
<Display lang="en"><![CDATA[Update Package Instructions for iDRAC-with-Lifecycle-Controller_Firmware_40T1C_WH64_2.63.60.61_A00.EXE.

Installation
1. Move to the location where you downloaded the file and double-click iDRAC-with-Lifecycle-Controller_Firmware_40T1C_WH64_2.63.60.61_A00.EXE.
2. Read over the release information presented in the dialog window.
3. Download and install any prerequisites identified in the dialog window before proceeding.
4. If this is a BIOS update package, install any necessary Enhanced Systems Management Firmware prior to this BIOS update. Otherwise, go next step.
5. Click the Install button.
6. Follow the remaining prompts to perform the update.

]]></Display>
</InstallInstruction>
</SoftwareComponent>

<< PACKAGE LOG >>2019-06-10 10:06:21
<< PACKAGE LOG (SelfExtractable) >>
Unique Temporary Folder Path << C:\Users\ADMINI-1\AppData\Local\Temp\203a3f40-b67f-4af2-987f-f49258c00823 >> is Deleted.

Update Package finished. Exit code = 0

2019-06-10 10:06:22

```

Figure 16 - EMS Server (5.13) Dell Server Update Files After

Properties:

- Name: iDRAC-with-Lifecycle-Controller_Firmware_40T1C_WH64_2.75.100.75_A00.log
- Type: Regular File
- Size: 100
- File Class: log
- File Size: 100
- Physical Size: 100
- Start Cluster: 0
- Date Accessed: 5/25/2021 6:05:11 PM
- Date Created: 5/25/2021 5:07:40 PM
- Date Modified: 5/25/2021 6:06:56 PM
- Encrypted: False
- Compressed: False
- Actual File: A00
- Start Sector: 0
- DOS Attributes: 0x00000000

File List:

Name	Size	Type	Date Modified
\$00	4	NTFS Index Al...	5/25/2021 6:05:11 PM
BIOS_TYX9_WH64_2.12.01.log	17	Regular File	4/27/2021 5:07:40 PM
BIOS_HD9V_WH64_2.12.01.log	14	Regular File	5/25/2021 6:06:56 PM
BIOS_HD9V_WH64_2.12.01.log.FileStack	3	File Stack	
Chiper_Driver_A73AM_WH64_0.1.1824.8188_A05_02.log	339	Regular File	4/29/2021 7:22:04 PM
Chiper_Driver_A73AM_WH64_0.1.1824.8188_A05_02.log.FileStack	2	File Stack	
iDRAC-with-Lifecycle-Controller_Firmware_DPVR_WH64_2.75.100.75_A00.log	53	Regular File	5/25/2021 6:06:19 PM
iDRAC-with-Lifecycle-Controller_Firmware_DPVR_WH64_2.75.100.75_A00.log.FileStack	4	File Stack	
Network_Driver_2848_WH64_20.0.0.0_A00.log	75	Regular File	5/25/2021 6:06:56 PM
Network_Driver_2848_WH64_20.0.0.0_A00.log.FileStack	2	File Stack	
Network_Driver_49034_WH64_11.80.3.2.18.169.21.log	51	Regular File	4/27/2021 5:03:17 PM
Network_Driver_49034_WH64_11.80.3.2.18.169.21.log.FileStack	2	File Stack	
Network_Firmware_40T1C_WH64_2.75.100.75_A00.log	43	Regular File	4/27/2021 5:04:15 PM
Network_Firmware_40T1C_WH64_2.75.100.75_A00.log.FileStack	2	File Stack	
Network_Firmware_704M_WH64_21.0.16.0.log	288	Regular File	4/27/2021 5:06:46 PM
Network_Firmware_807M_WH64_0.0.0.83.log	263	Regular File	5/25/2021 6:10:46 PM
Power_Firmware_POFN_WH64_0.0.0.83.log	2	File Stack	
Power_Firmware_POFN_WH64_0.0.0.83.log.FileStack	30	Regular File	5/25/2021 6:11:19 PM
SAS_RAID_Driver_T24W_WH64_6.0.04.00_A01_07.log	3	File Stack	
SAS_RAID_Driver_T24W_WH64_6.0.04.00_A01_07.log.FileStack	67	Regular File	5/25/2021 6:12:17 PM
SAS_RAID_Firmware_F07Y_WH64_25.5.00.00_A11_01.log	2	File Stack	
SAS_RAID_Firmware_F07Y_WH64_25.5.00.00_A11_01.log.FileStack			

File List (continued):

```

4. F07Y><!-- REMAINING PROMPTS TO PERFORM THE UPDATE--></Display>
</InstallInstruction>
</SoftwareComponent>

<Display lang="en"><![CDATA[Files:
- Fixed an issue that caused sluggish iDRAC UI performance while multiple WinMan sessions are running.
- Fixed an issue where UEFI10060 and PWR1006 messages are logged intermittently during host reboots.

Enhancements:
- N/A]></Display>
<RevisionHistory>
<Revision>
<URL>https://www.com/support/home/us/en/19/Drivers/Details?deviceId=DPVR>
<DisplayLang>en</DisplayLang><![CDATA[1A1]></Display>
<ImportInfo>
<Criticality value="1">
<Display lang="en"><![CDATA[Recommended-The service provider recommends applying this update during your next scheduled update cycle. The update contains feature enhancements or changes that are critical to the system's performance and stability. It is recommended to apply this update as soon as possible.]]</Display>
</Criticality>
</ImportInfo>
</SoftwareComponent>

<< PACKAGE LOG >>2021-05-25 12:08:16
<< PACKAGE LOG (SelfExtractable) >>
Unique Temporary Folder Path << C:\Users\EMSHIN\AppData\Local\Temp\54e350a-9121-4008-bf7a-ea9915659133 >> is Deleted.

Update Package finished. Exit code = 0

2021-05-25 12:08:18

```

Sizes, Dates/Times are different.
These Log Files have been
replaced with different files.

Several log files of great importance to an investigation are shown in Figure 16. The SAS RAID firmware and drivers logs tell us about the functionality of hard disk controllers (RAID is an acronym for Redundant Array of Independent Disks) and about this storage redundancy's physical capability. Network Firmware logs tell us which hardware devices were updated with new firmware, and the version allows us to trace back to its network (and possibly Internet) functionality. The application of iDRAC controller firmware may indicate the presence of a special hardware controller intended to permit complete remote control of the computer system. This iDRAC controller is often used when a data center must be located an inconvenient distance away from its owner and/or operators, or for example, when such a computer might be physically located at an Internet Service Provider's secure data center. The iDRAC controller permits a remote user to remotely turn on the power to the server, reboot it, access administrative control functions, and make changes to the server, *OUTSIDE THE CONTROL, or even the awareness, of the local computer operator and its operating system*. Among the changes possible via an iDRAC are changes to the BIOS (Basic I/O System) including those firmware settings that include the computer Clock, boot device order, which disks or other data storage devices are used to boot the computer, and some other computer capabilities.

Take note of what files remain following the update.

Not only are the files in an entirely different directory, but the file modification dates have changed, and more importantly, these logs are for DIFFERENT versions of the software, and the previous logs have been overwritten.

Physical examination of the EMS computer system is required to verify the presence or absence of an iDRAC controller, however it is highly irregular for update software to install updates to software for a hardware device that has not been installed.

Server 'Administrator' WebCache Log Files Overwritten

Purpose: These log files store information about websites visited, files opened, etc.

Figure 17 - EMS Server (5.11-CO) Administrator WebCache Log Files Before

Figure 18 - EMS Server (5.13) Administrator WebCache Log Files After

Server 'emsadmin' WebCache Log Files Overwritten

Purpose: These log files store information about websites visited, files opened, etc.

Figure 19 - EMS Server (5.11-CO) "emsadmin" WebCache Log Files Before

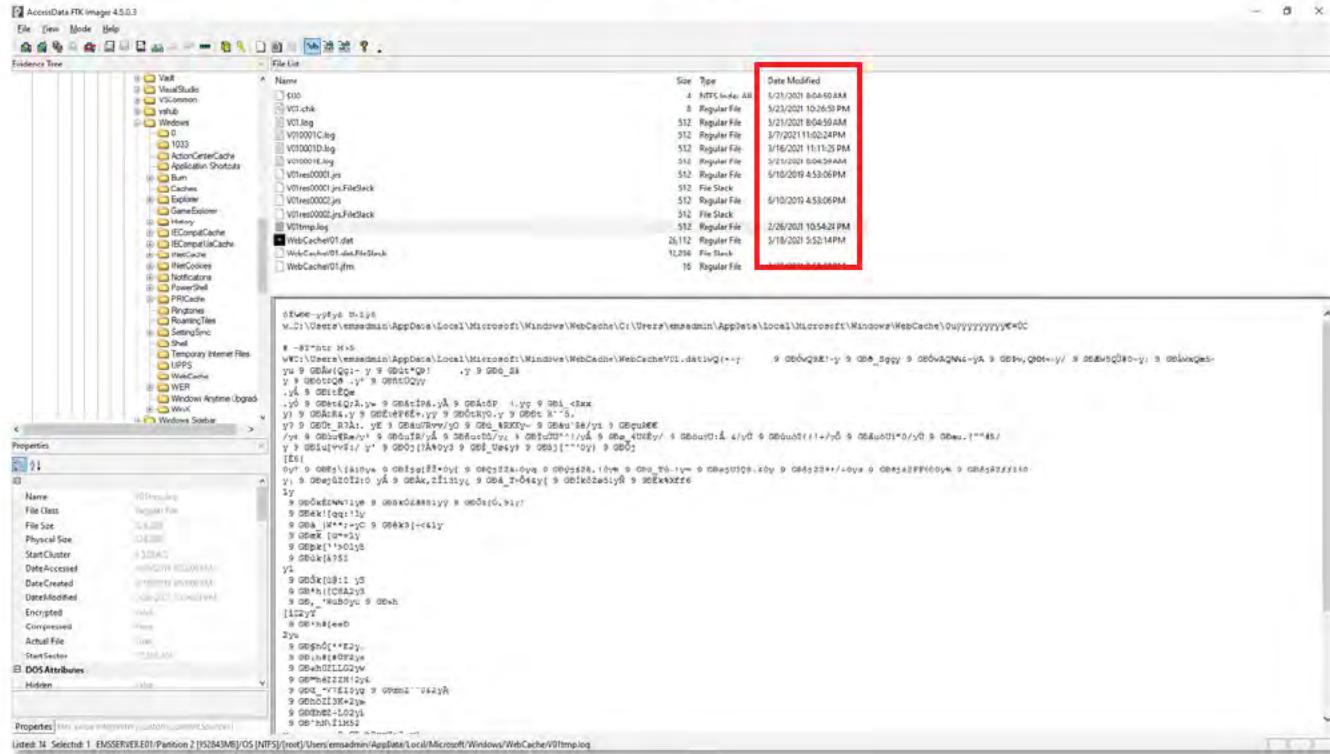
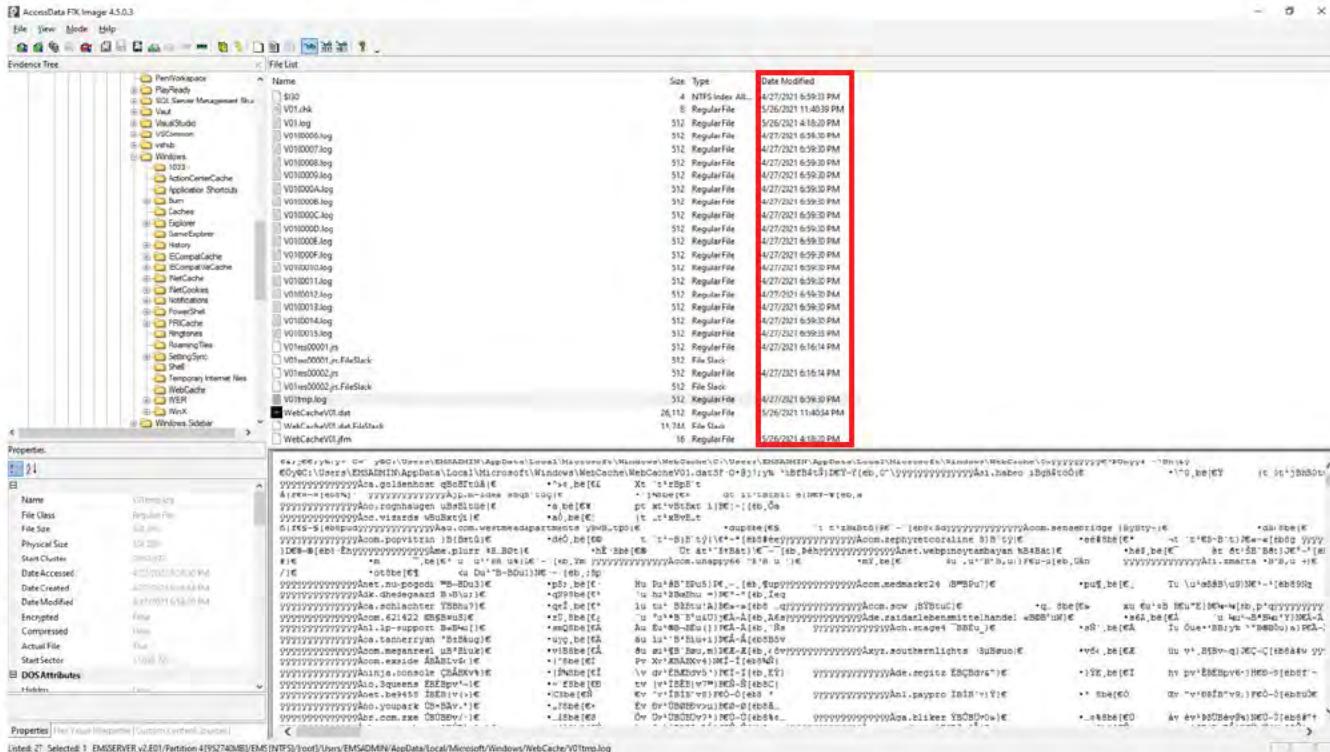


Figure 20 -EMS Server (5.13) "emsadmin" WebCache Log Files After



The WebCache log files have been overwritten. IF the computer has been used on the Internet or with ANY webserver (even one on the local network, including this computer's OWN webserver), these WebCache files indicate the connections that were sought, as well as files that were opened. These may provide *critical* evidence that the system has been connected to a network, including networks that have access to the Internet. THESE ARE NOT the same files in the before and after images. They have been deleted and replaced.

Here is a small subset of some of the information that was found on the Before image in these WebCache log files:

Figure 21 - EMS Server (5.11-CO) Webcache Log File Content Before

Container_15 [Table ID = 49, 25 Columns]			
EntryId	ContainerId	Url	AccessedTime
① 1	15	:2020060820200615: DVSAdministrator@:Host: This PC	132368189382665280
② 2	15	:2020060820200615: DVSAdministrator@file:///C:/Users/Administrator/Desktop/DVS%20Adjudication%20%20Key.pfx	132368189382821518

For instance, the above log file entry seems to show a DVS Adjudication Encryption Key was accessed, where it was stored and accessed from, and when it was accessed.

Figure 22 - EMS Server (5.11-CO) Webcache Log File Content Before - II

Container_18 [Table ID = 39, 25 Columns]			
EntryId	ContainerId	Url	AccessedTime
① 1	18	:2021051820210519: emsadmin@file:///F:/Logs	132658341190420467
② 2	18	:2021051820210519: emsadmin@Host: This PC	132658341190576330
③ 3	18	:2021051820210519: emsadmin@file:///F:/	132658341190732829
④ 4	18	:2021051820210519: emsadmin@file:///F:/Logs/5_18_21.evtx	132658341410603691
⑤ 5	18	:2021051820210519: emsadmin@file:///emsserver/nas/2020%20Mesa%20County%20General/Results/Tabulator00004/Batch2003/1_1_4_2003_DETAIL.DVD.txt	132658342689478943
⑥ 6	18	:2021051820210519: emsadmin@Host: emsserver	132658342689478943
⑦ 7	18	:2021051820210519: emsadmin@file:///emsserver/nas/2020%20Mesa%20County%20General/Results/Tabulator00004/Batch2003/Images/00004_02003_00001.tif	132658342760262058

In addition, the above log file entry seems to show several interesting files (a windows 'evtx' log file being opened from an external attached USB flash drive, and a ballot detail file and even a ballot image from Batch 2003 being opened from a Network Attached Storage device)

Without a forensic Before image prior to a Dominion 'Update', this type of potentially critically-important forensic information could be, and likely would be, lost forever.

Server SQL Server Management Studio (SSMS) Log Files Overwritten

Purpose: These log files track the installation of the SQL Server Management Studio, which is used to get into the back-end of the election databases.

Figure 23 - EMS Server (5.11-CO) SSMS Log Files Before

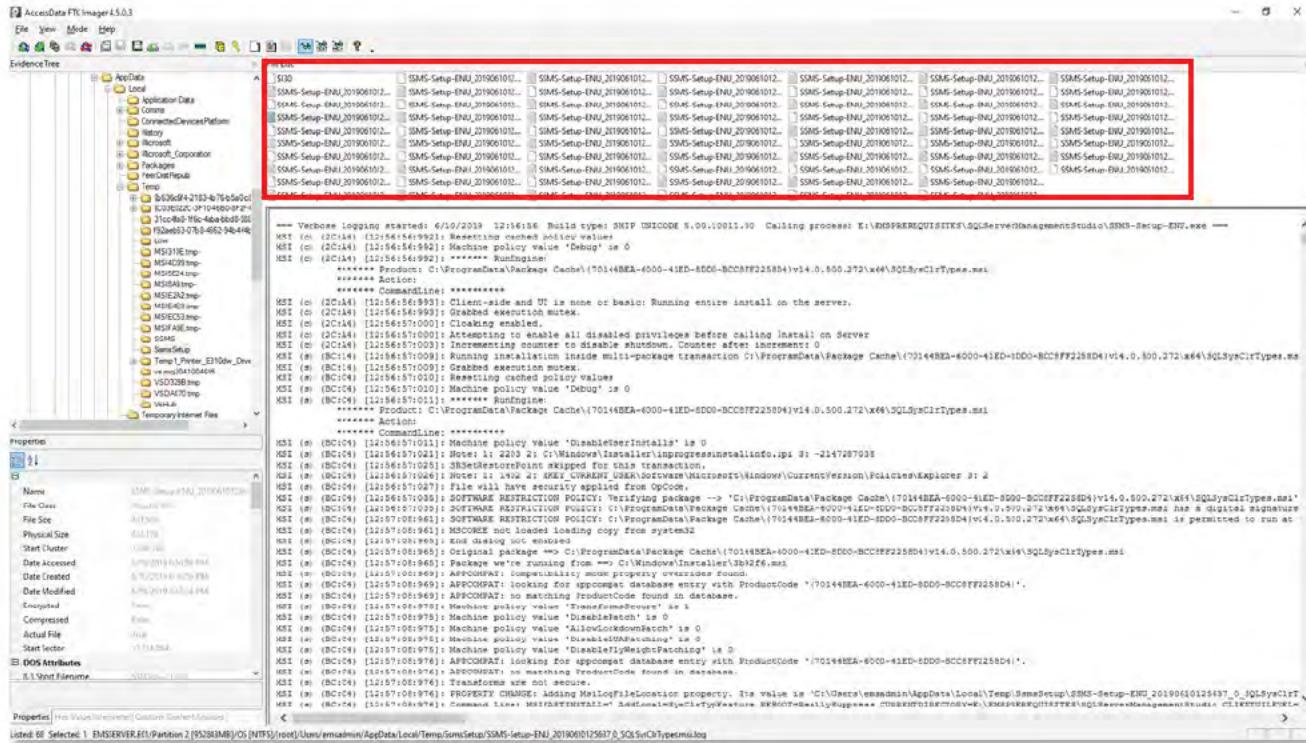
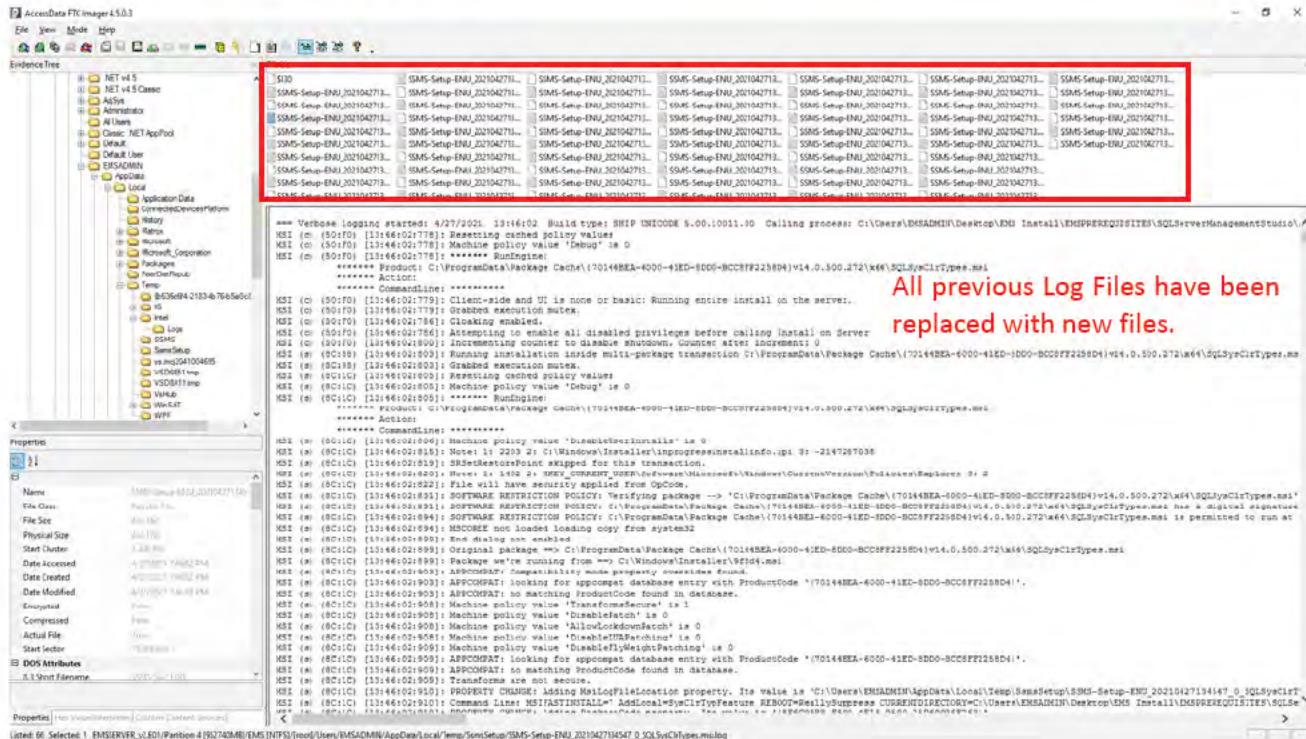


Figure 24 - EMS Server (5.13) SSMS Log Files After



Server CBS Log Files Overwritten

Purpose: These Log Files contain detailed information about installed updates. They could contain evidence of changes to the server that would cause decertification of the system.

Figure 25 - EMS Server (5.11-CO) CBS Log Files Before

AccessData FTK Imager 4.5.0.3

Evidence Tree: \Windows\Logs\WindowsUpdate\Logs\CBS\CBS.log

File List

Name	Size	Type	Date Modified
CBS.log	7,560	Regular File	5/2/2019 5:04:27 PM
CbsPerf_219001511045.cat	793	Regular File	9/10/2019 5:04:27 PM
CbsPerf_219001511045.cat.FileStack	4	File Stack	
CbsPerf_219001511045.log	94	Text File	5/25/2019 5:43:01 PM
CbsPerf_219100115045.cat	3	File Stack	
CbsPerf_219100115045.log	890	Regular File	5/2/2019 5:04:27 PM
CbsPerf_219100115045.cat.FileStack	3	File Stack	
CbsPerf_219100115012.cat	90	Regular File	9/3/2019 10:09:08 PM
CbsPerf_219100115012.log	0	Regular File	5/3/2019 10:09:08 PM

Properties

Name: CBS.log

File Class: Regular File

File Size: 7,560 bytes

Physical Size: 7,560 bytes

Compressed Size: 7,560 bytes

Start Cluster: 1075100

Date Accessed: 5/2/2019 5:04:27 PM

Date Created: 5/2/2019 5:04:27 PM

Date Modified: 5/2/2019 5:04:27 PM

Encrypted: False

Compressed: False

Actual File: CBS.log

Start Sector: 7,560 bytes

DATX Attributes

Properties (Raw) (File Interpreter) (Custom Columns) (Search)

Selected 1 EMSERVER01\Partition 2 (9284MB) \OS (NTFS)\root\Windows\Logs\WindowsUpdate\Logs\CBS\CBS.log

Figure 26 - EMS Server (5.13) CBS Log Files After

AccessData FTK Imager 4.5.0.3

Evidence Tree: \Windows\Logs\WindowsUpdate\Logs\CBS\CBS.log

File List

Name	Size	Type	Date Modified
4_NTS.Indy.00	1,800	Regular File	5/25/2021 5:44:15 PM
CBS.log	512	Regular File	4/27/2021 6:59:18 PM
CbsPerf_201042711907.cat	1	File Stack	
CbsPerf_201042711907.cat.FileStack	5001	Regular File	4/27/2021 6:59:05 PM
CbsPerf_201042711949.cat	4	File Stack	
CbsPerf_201042711903.cat	500	Regular File	4/27/2021 6:52:28 PM
CbsPerf_201042711903.cat.FileStack	4	File Stack	
CbsPerf_201052520119.cat	1300	Regular File	5/25/2021 5:44:15 PM
CbsPerf_201052520119.cat.FileStack	1	File Stack	
CbsPerf_201052520119.log	0	Regular File	5/25/2021 5:44:15 PM

Properties

Name: CBS.log

File Class: Regular File

File Size: 512 bytes

Physical Size: 512 bytes

Compressed Size: 512 bytes

Start Cluster: 1075022

Date Accessed: 5/25/2021 5:44:15 PM

Date Created: 4/27/2021 6:59:18 PM

Date Modified: 4/27/2021 6:59:18 PM

Encrypted: False

Compressed: False

Actual File: CBS.log

Start Sector: 7,560 bytes

DATX Attributes

Properties (Raw) (File Interpreter) (Custom Columns) (Search)

Selected 1 EMSERVER01\Partition 2 (9284MB) \OS (NTFS)\root\Windows\Logs\WindowsUpdate\Logs\CBS\CBS.log

File names, sizes, and dates have changed. These files have all been replaced.

Server Election Databases Missing

Purpose: This folder holds all the databases (votes, information regarding batches, when they were processed, how many were processed, who they were processed by, and much more). There are also multiple extra databases that contain information regarding ballot adjudication.

Figure 27 - EMS Server (5.11-CO) Election Databases Before

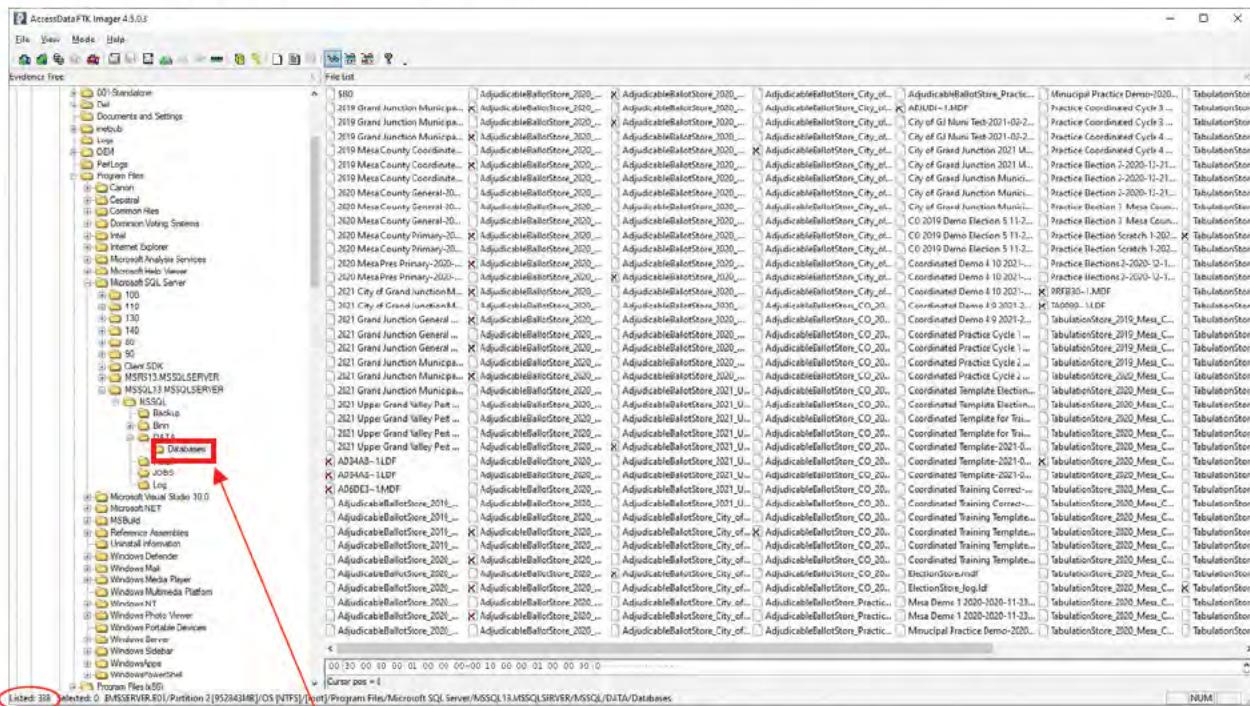
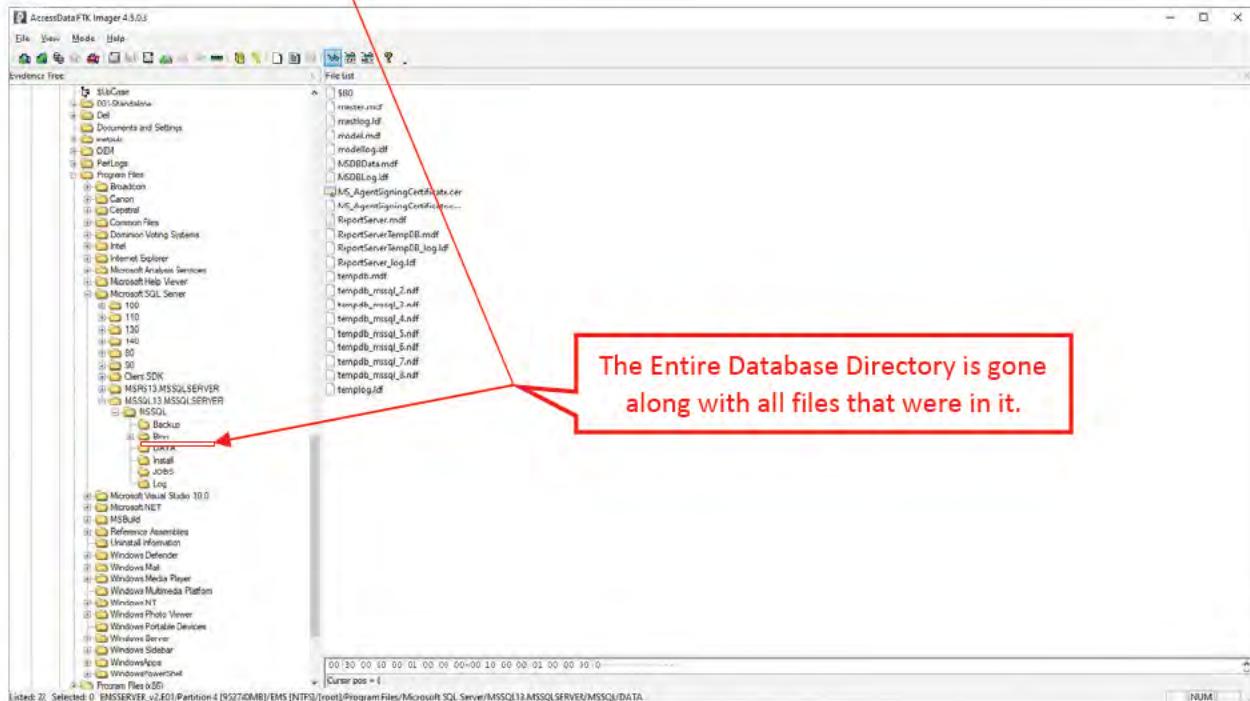


Figure 28 - EMS Server (5.13) Election Databases After



Server DHCP Log Files Missing/Overwritten

EXHIBIT 6, Page 31

Purpose: DHCP Log Files can show evidence regarding computers or other devices being connected to the network.

Figure 29 - EMS Server (5.11-CO) DHCP Log Files Before

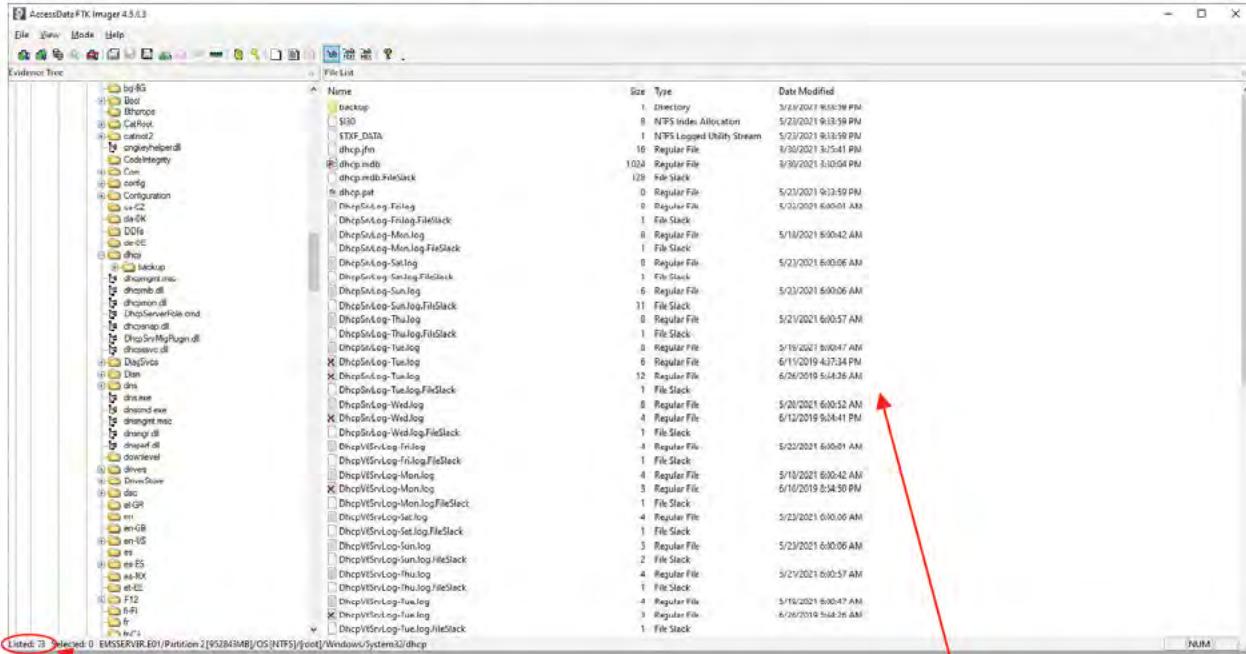
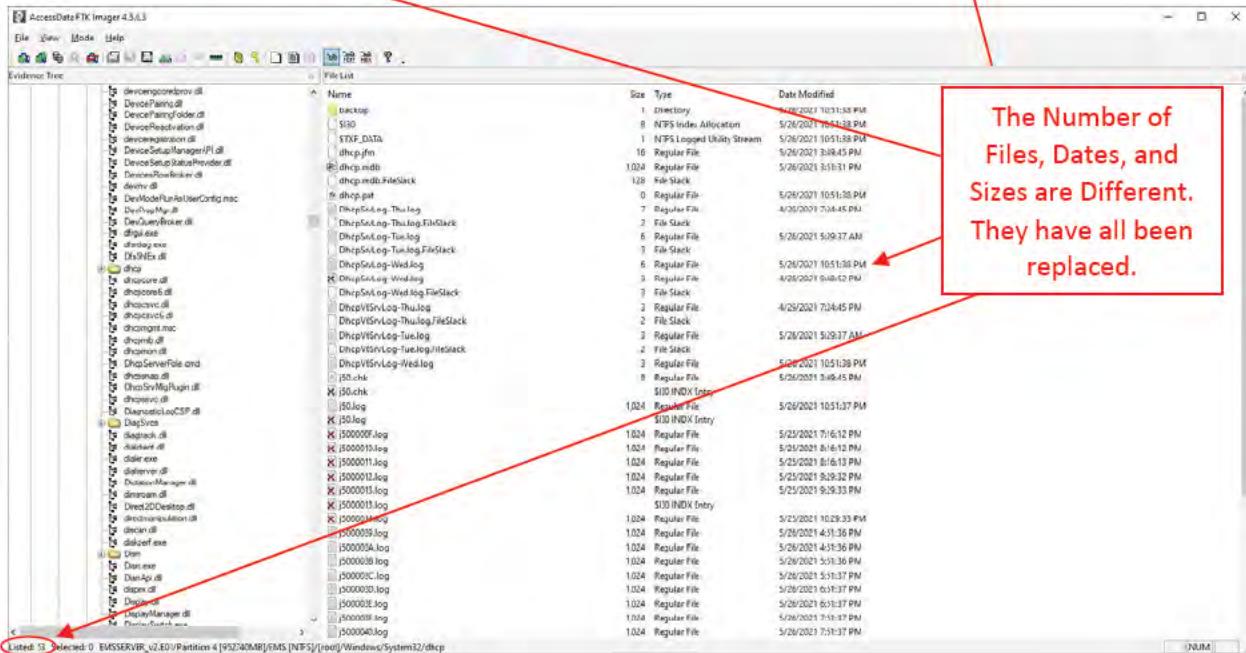


Figure 30 - EMS Server (5.13) DHCP Log Files After



The Number of
Files, Dates, and
Sizes are Different.
They have all been
replaced.

Server Event Logs Missing/Overwritten

Purpose: These Dominion Log Files keep track of election/project-related activity. The Windows Server event logs outside the red box keep track of much of the activity on the server.

Figure 31 - EMS Server (5.11-CO) Event Logs Before

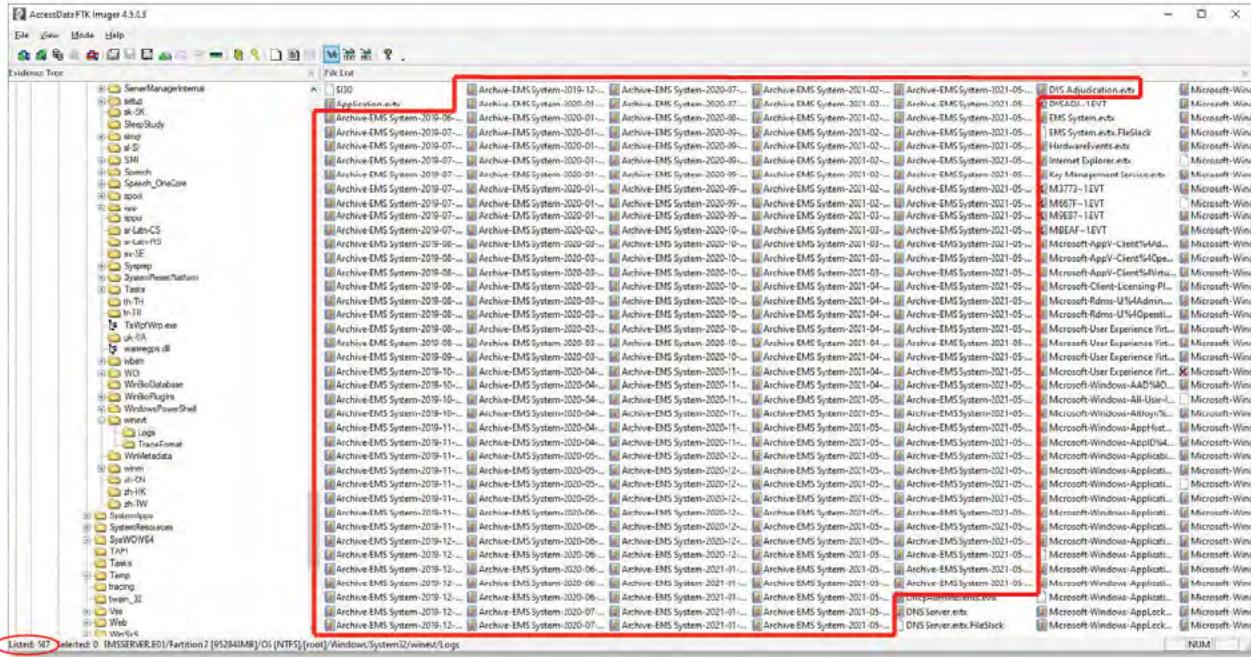


Figure 32 - EMS Server (5.13) Event Logs After

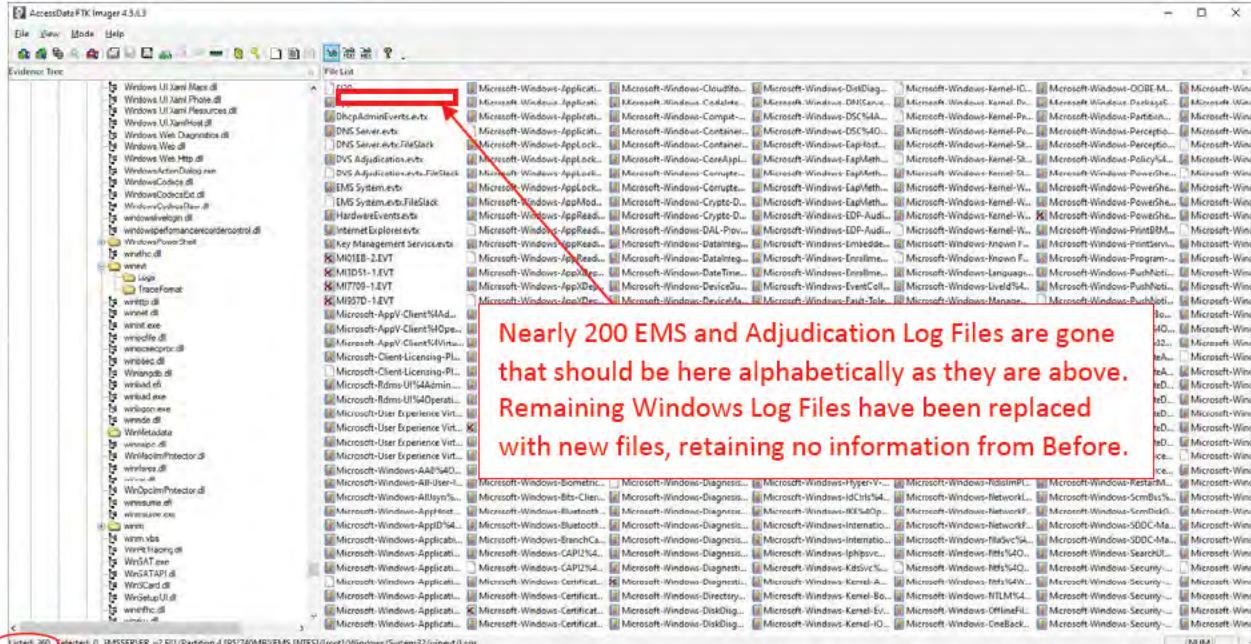


EXHIBIT 6, Page 33

Below are some screen shots of the kind of Election-Related information (such as cast vote records, audit marks, image retrievals, result file loads, etc.) in the EMS Archive Logs that are missing After the Dominion Update:

Figure 33 - Examples of Election Data Missing After Update

Server System Users are Missing

Purpose: These folders store the information for each user account on the server.

Figure 34 - EMS Server (5.11-CO) System Users Before

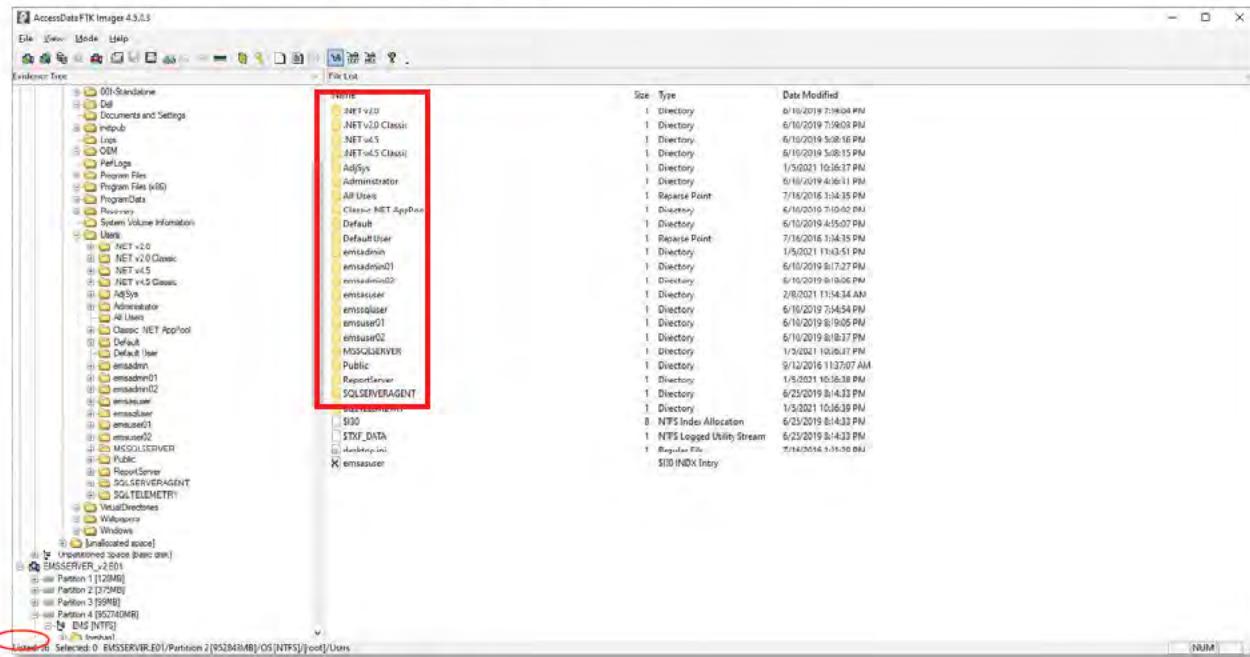
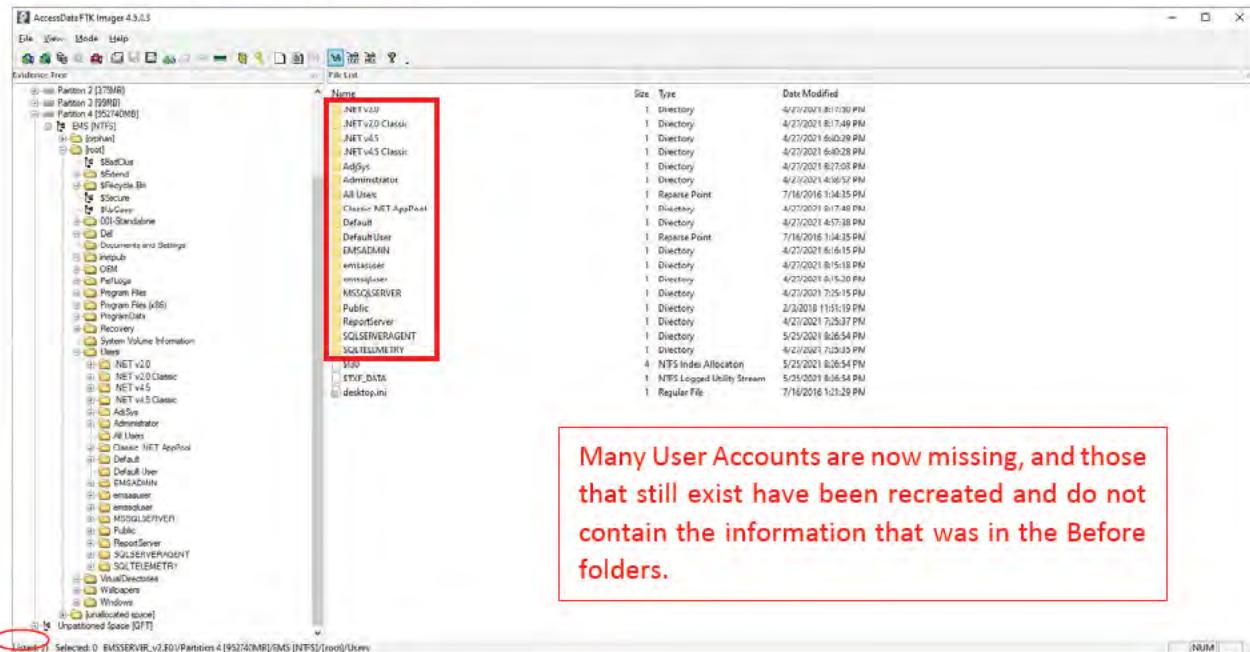


Figure 35 - EMS Server (5.13) System Users After



Many User Accounts are now missing, and those that still exist have been recreated and do not contain the information that was in the Before folders.

Server Virtual Directories Log Files Missing

Purpose: These are the Log Files that contain information, warnings, and errors relating to the Website Server as the server processes election projects that have been set up.

Figure 36 - EMS Server (5.11-CO) Virtual Directory Log Files Before

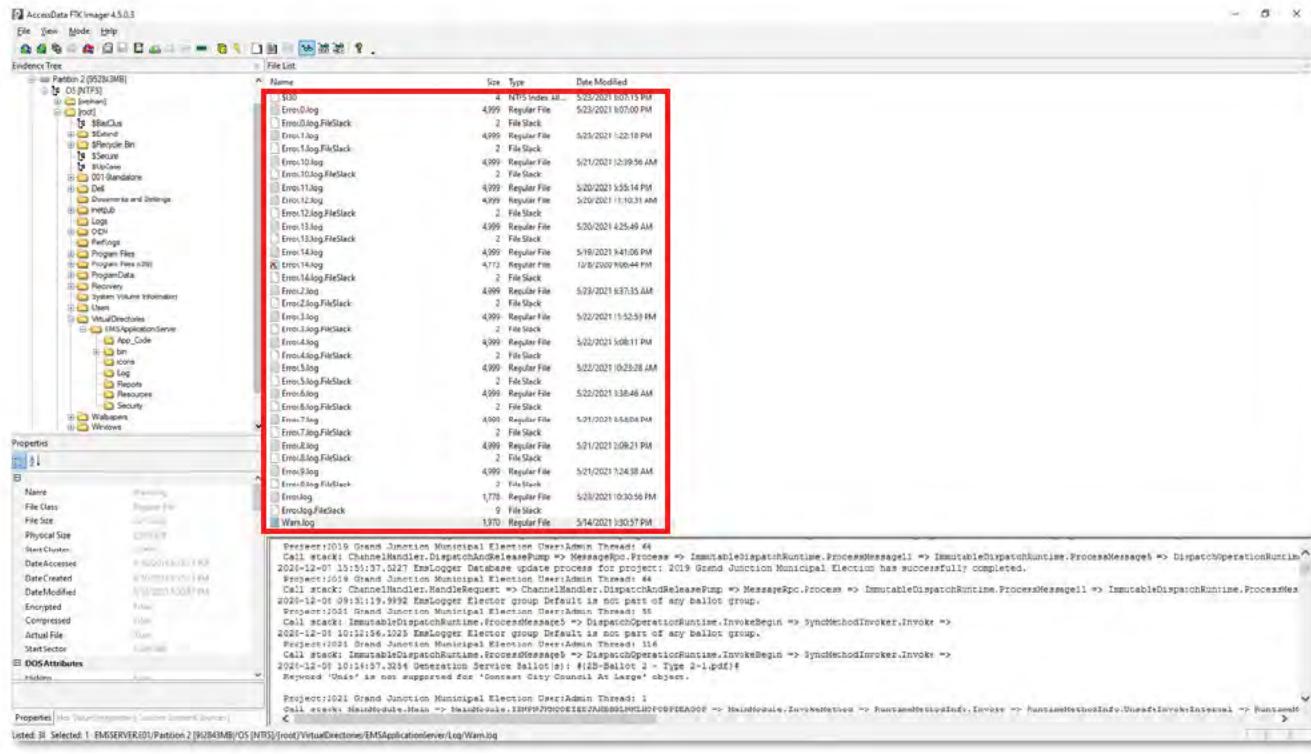
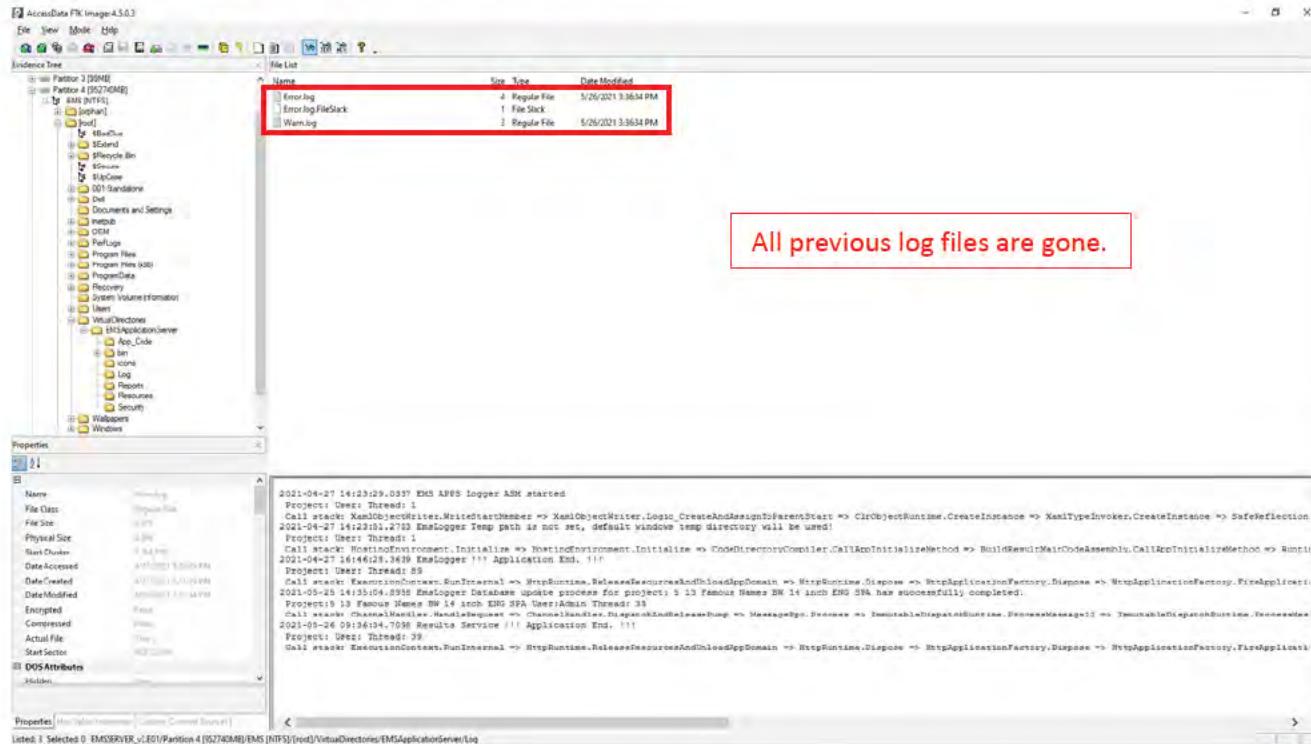


Figure 37 - EMS Server (5.13) Virtual Directory Log Files After



All previous log files are gone.

Server Windows Defender Log Files Missing/Overwritten

Purpose: These log files keep track of the activity of the built-in Anti-Virus software.

Figure 38 - EMS Server (5.11-CO) Windows Defender Log Files Before Dominion Update:

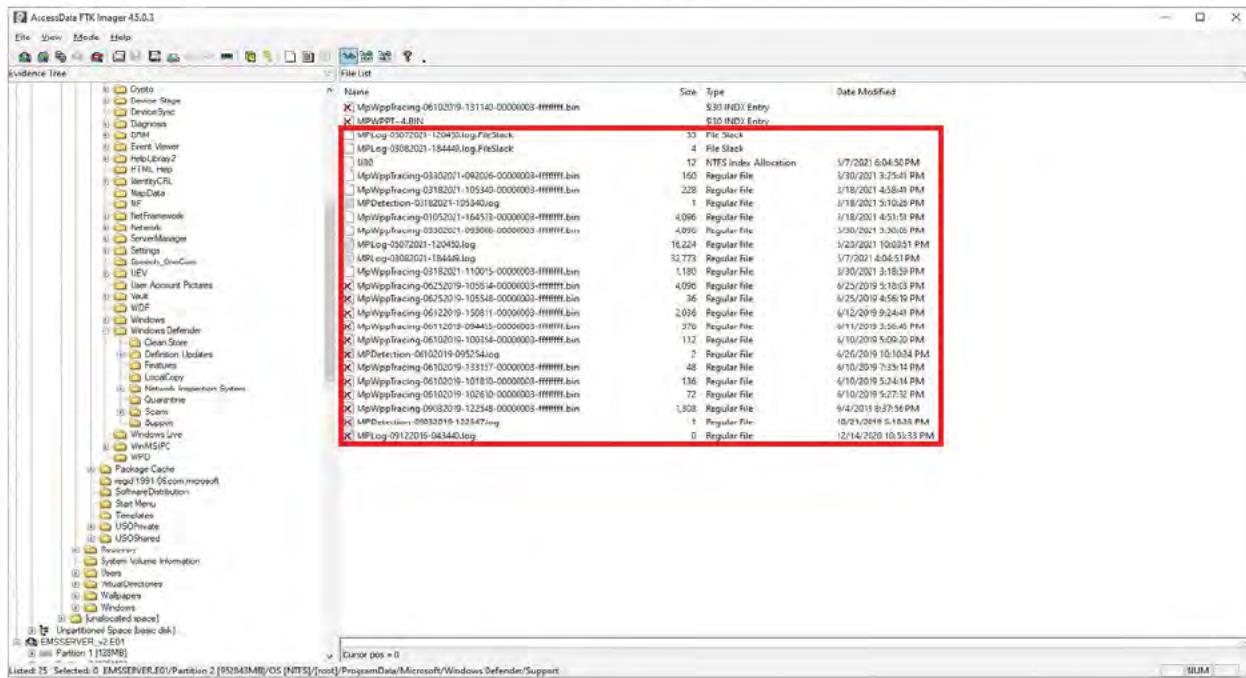
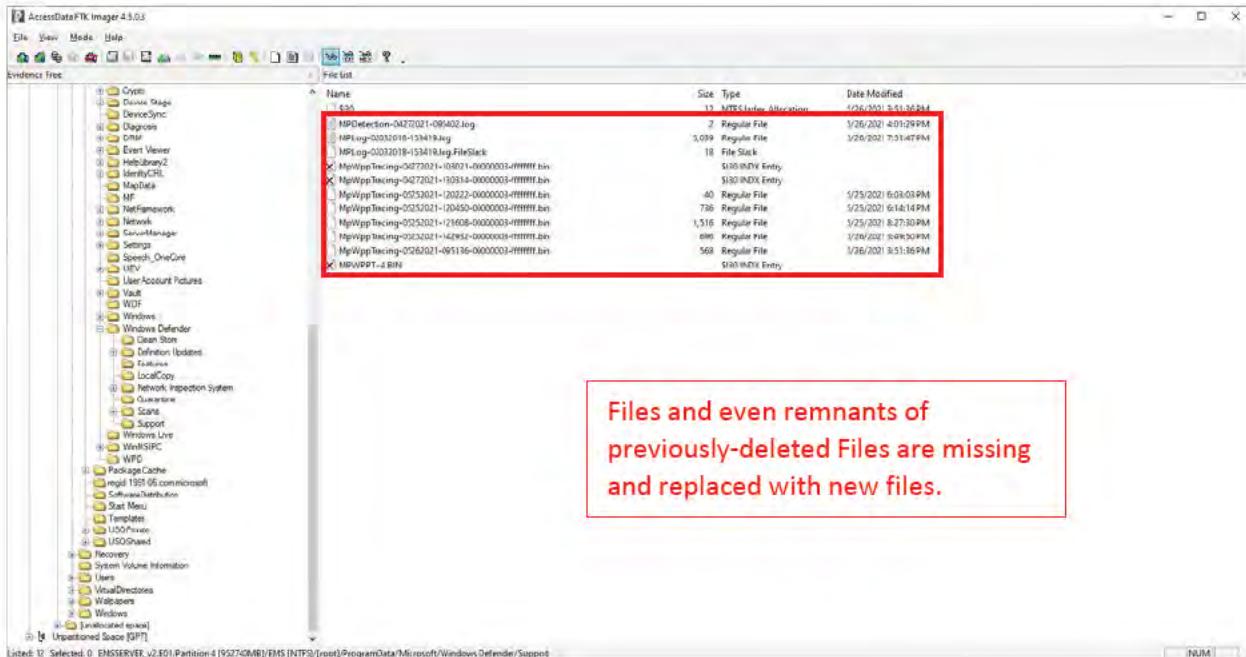


Figure 39 - EMS Server (5.13) Windows Defender Log Files After



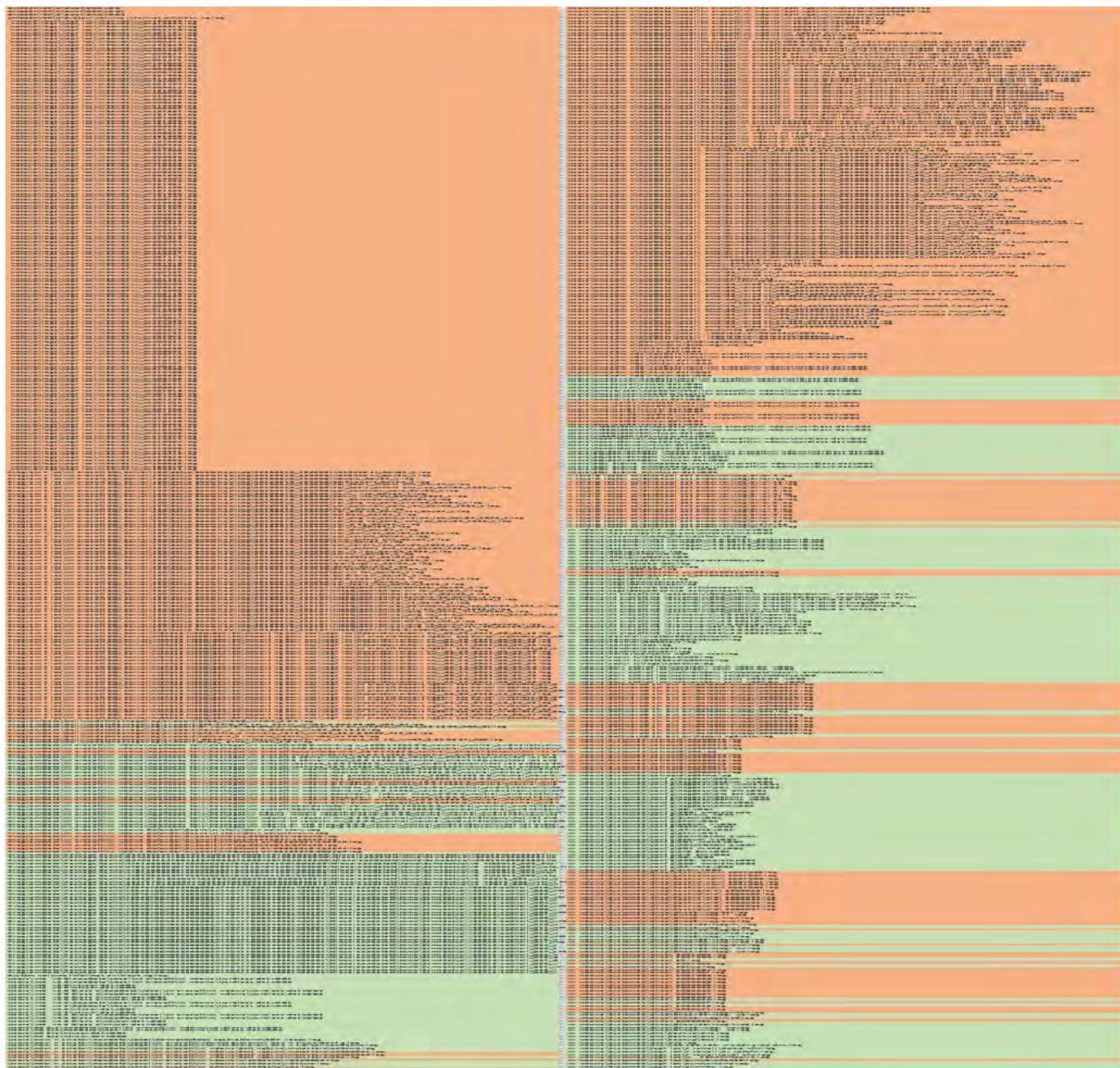
Server List of .log files in Before Image that were Deleted.

This list that follows this paragraph is a comparison of the Before and After forensic images of the Mesa County EMS Server. It is a comparative list of files that were deleted – either deliberately erased or overwritten with disregard for the preservation of these files, some of which contain ELECTION RELATED data.

Each line in the image below is the full path listing to each one of the 807 files that end with the word ".log" found on the EMS Server before the Dominion update was applied.

The Color code shows what happened to them After Dominion's update. Of all the files on the server Before the update – files highlighted in Green are still present on the server after the update, while files highlighted in light red have been overwritten and are deleted and not present in the image taken After the update.

Figure 40 - EMS Server Before/After .log File Comparison List



Users\Administrator\AppData\Local\Microsoft\Windows\WebCache\V0100002J.log	Windows\System32\LogFiles\Sum\Apitmp.log
Users\Administrator\AppData\Local\Microsoft\Windows\WebCache\V010000AJ.log	Windows\System32\LogFiles\Sum\Svc00167.log
Users\Administrator\AppData\Local\Microsoft\Windows\WebCache\V010000CJ.log	Windows\System32\LogFiles\Sum\Svc00168.log
Users\Administrator\AppData\Local\Microsoft\Windows\usrClass.dat.LOG1	Windows\System32\LogFiles\Sum\SC.vc.log
Users\Administrator\AppData\Local\Microsoft\Windows\usrClass.dat.LOG2	Windows\System32\Microsoft\Protect\Recovery\Recovery.dat.LOG1
Users\Administrator\AppData\Local\Packages\Microsoft.AAD.BrokerPlugin_cw5n1h2txyewy\Settings\settings.dat.LOG1	Windows\System32\Microsoft\Protect\Recovery\Recovery.dat.LOG2
Users\Administrator\AppData\Local\Packages\Microsoft.AAD.BrokerPlugin_cw5n1h2txyewy\Settings\settings.dat.LOG2	Windows\System32\Microsoft\Protect\Recovery\Recovery.dat.LOG1
Users\Administrator\AppData\Local\Packages\Microsoft.AccountsControl_cw5n1h2txyewy\Settings\settings.dat.LOG1	Windows\System32\Microsoft\Protect\Recovery\Recovery.dat.LOG2
Users\Administrator\AppData\Local\Packages\Microsoft.AccountsControl_cw5n1h2txyewy\Settings\settings.dat.LOG2	Windows\System32\MSI\Store\Machine\SCHEMA.DAT.LOG1
Users\Administrator\AppData\Local\Packages\Microsoft.BioEnrollment_cw5n1h2txyewy\Settings\settings.dat.LOG1	Windows\System32\MSI\Store\Machine\SCHEMA.DAT.LOG2
Users\Administrator\AppData\Local\Packages\Microsoft.BioEnrollment_cw5n1h2txyewy\Settings\settings.dat.LOG2	Windows\System32\Sysprep\Parther\VE\setupact.log
Users\Administrator\AppData\Local\Packages\Microsoft.LockApp_cw5n1h2txyewy\Settings\settings.dat.LOG1	Windows\System32\Sysprep\Parther\VE\setuperr.log
Users\Administrator\AppData\Local\Packages\Microsoft.LockApp_cw5n1h2txyewy\Settings\settings.dat.LOG2	Windows\System32\Sysprep\Parther\VE\setuperr.log
Users\Administrator\AppData\Local\Packages\Microsoft.LockApp_cw5n1h2txyewy\Settings\settings.dat.LOG1	Windows\System32\Sysprep\Parther\VE\setupact.log
Users\Administrator\AppData\Local\Packages\Microsoft.LockApp_cw5n1h2txyewy\Settings\settings.dat.LOG1	Windows\System32\Windows\UI.Logon
Users\Administrator\AppData\Local\Packages\Microsoft.LockApp_cw5n1h2txyewy\Settings\settings.dat.LOG2	Windows\System32\Windows\UI.PrintDialog
Users\Administrator\AppData\Local\Packages\Microsoft.Windows.AssignedAccessLockApp_cw5n1h2txyewy\Settings\settings.dat.LOG1	Windows\Temp\pksetup-20190625-113536-0.log
Users\Administrator\AppData\Local\Packages\Microsoft.Windows.AssignedAccessLockApp_cw5n1h2txyewy\Settings\settings.dat.LOG2	Windows\Temp\pksetup-20190626-162623-0.log
Users\Administrator\AppData\Local\Packages\Microsoft.Windows.CloudExperienceHost_cw5n1h2txyewy\Settings\settings.dat.LOG1	Windows\WinSxS\amd64_microsoft-windows-com-dtc-runtime_31bf3856ad364e35_10.0.14393.0_none_46c76e6076b59fe9\MSDTC.LOG
Users\Administrator\AppData\Local\Packages\Microsoft.Windows.CloudExperienceHost_cw5n1h2txyewy\Settings\settings.dat.LOG2	Windows\WinSxS\amd64_4sp0\portable\part\31bf3856ad364e35_10.0.14393.0_none_620a5da1064dcfc0\allusers_tsxa.log
Users\Administrator\AppData\Local\Packages\Microsoft.Windows.Cortana_cw5n1h2txyewy\ACTemp\StructuredQuery.log	Windows\Temp\MpCmdRun.log
Users\Administrator\AppData\Local\Packages\Microsoft.Windows.Cortana_cw5n1h2txyewy\Settings\settings.dat.LOG1	Windows\Temp\si\config.log
Users\Administrator\AppData\Local\Packages\Microsoft.Windows.Cortana_cw5n1h2txyewy\Settings\settings.dat.LOG2	Windows\Temp\ASPMETSetup_00000.log
Users\Administrator\AppData\Local\Packages\Microsoft.Windows.SecondaryTitleExperience_cw5n1h2txyewy\Settings\settings.dat.LOG1	Windows\Temp\ASPMETSetup_00001.log
Users\Administrator\AppData\Local\Packages\Microsoft.Windows.SecondaryTitleExperience_cw5n1h2txyewy\Settings\settings.dat.LOG2	Windows\WinSxS\amd64_4sp0\portable\part\31bf3856ad364e35_10.0.14393.0_none_620a5da1064dcfc0\allusers_tsxa.log
Users\Administrator\AppData\Local\Packages\Microsoft.Windows.Shell\Experience\host_cw5n1h2txyewy\Settings\settings.dat.LOG1	Windows\WindowsUpdate.log
Users\Administrator\AppData\Local\Packages\Microsoft.Windows.Shell\Experience\host_cw5n1h2txyewy\Settings\settings.dat.LOG2	Windows\WindowsUpdate.log
Users\Administrator\AppData\Local\Packages\Microsoft.XboxGameCallableUI_cw5n1h2txyewy\Settings\settings.dat.LOG1	Lost Files\5007PRO.log
Users\Administrator\AppData\Local\Packages\Microsoft.XboxGameCallableUI_cw5n1h2txyewy\Settings\settings.dat.LOG2	Windows\DtInstall.log
Users\Administrator\AppData\Local\Packages\Windows.ImmersiveControlPanel_cw5n1h2txyewy\Settings\settings.dat.LOG1	Windows\Setup\log
Users\Administrator\AppData\Local\Packages\Windows.ImmersiveControlPanel_cw5n1h2txyewy\Settings\settings.dat.LOG2	Windows\Setupact.log
Users\Administrator\AppData\Local\Packages\Windows.MiracastView_cw5n1h2txyewy\Settings\settings.dat.LOG1	Windows\Setuperr.log
Users\Administrator\AppData\Local\Packages\Windows.MiracastView_cw5n1h2txyewy\Settings\settings.dat.LOG2	Windows\Wsusofflineupdate.log
Users\Administrator\AppData\Local\Packages\Windows.PrintDialog_cw5n1h2txyewy\Settings\settings.dat.LOG1	Windows\WindowsUpdate.log
Users\Administrator\AppData\Local\Packages\Windows.PrintDialog_cw5n1h2txyewy\Settings\settings.dat.LOG2	Lost Files\5007CCF.log
Users\Administrator\AppData\Local\Temp\MpSigStub.log	Lost Files\5007CD0.log
Users\Administrator\AppData\Local\Temp\VmSetup.log	Lost Files\5007CD1.log
Users\Administrator\AppData\Local\Temp\VmSetup.log	Lost Files\5007CD2.log
Users\Administrator\AppData\Local\Temp\VmSetup.log	Lost Files\5007CD0.log
Users\Administrator\AppData\Local\Temp\VmSetup.log	Lost Files\5007CD1.log
Users\Administrator\ntuser.dat.LOG1	Lost Files\5007CCD.log
Users\Administrator\ntuser.dat.LOG2	Lost Files\500002E.log
Users\Classic .NET AppPool\appdata\local\Microsoft\Windows\usrClass.dat.LOG1	Lost Files\500002F.log
Users\Classic .NET AppPool\appdata\local\Microsoft\Windows\usrClass.dat.LOG2	Lost Files\5000030.log
Users\Classic .NET AppPool\ntuser.dat.LOG1	Lost Files\5000031.log
Users\Classic .NET AppPool\ntuser.dat.LOG2	Lost Files\5000032.log
Users\Default\ntuser.dat.LOG2	Lost Files\5000033.log
Users\Default\ntuser.dat.LOG1	Lost Files\5000034.log
Users\emsadmin\appdata\local\ConnectedDevicesPlatform\CDP\Traces.log	Lost Files\5000035.log
Users\emsadmin\appdata\local\Microsoft\Internet Explorer\ed4unit\userConfig.log	Lost Files\5000036.log
Users\emsadmin\appdata\local\Microsoft\Internet Explorer\ed4unit\ClearIconCache.log	Lost Files\5000037.log
Users\emsadmin\appdata\local\Microsoft\SQL Server Management Studio\14.0\ComponentModelCache\Microsoft.VisualStudio.Default.cat	Lost Files\5000038.log
Users\emsadmin\appdata\local\Microsoft\Windows\SettingSync\metastore\ed8tmp.log	Lost Files\5000039.log
	Lost Files\500003A.log

Significant Number of Logfiles Missing

The dataset from which this spreadsheet was created was extracted from the EnCase images of the original evidence on the hard drives of the EMS Server and had a traceable chain of custody. While the images above are too small to be readable, the entire content of this list is reproduced in Appendix A.

Of the original 807 ".log" files on the EMS Server before Dominion's update, only 302 remain, and 505 ".log" files have been deleted or overwritten.

Of the files *that remain*, the forensic examination has not yet verified whether the content of these files (which have the same filename and Path – e.g., in the same directories) is unchanged. The files that have been deleted DO include files that constitute Election Records and are subject to Federal and State data retention laws.

This list is only 807 files, and the text size is so small that the content is barely readable. The list of files has been broken down into small subsets because the number of files on the entire server totals 363,321 files, many of which are provided by Microsoft as part of the Windows Server 2016 operating system and its associated application programs and are not Election Related and do not contain actual Election Data.

List of .evtx Event Log Files deleted

Figure 41 - EMS Server (5.11-CO) List of .evt Log Files Before

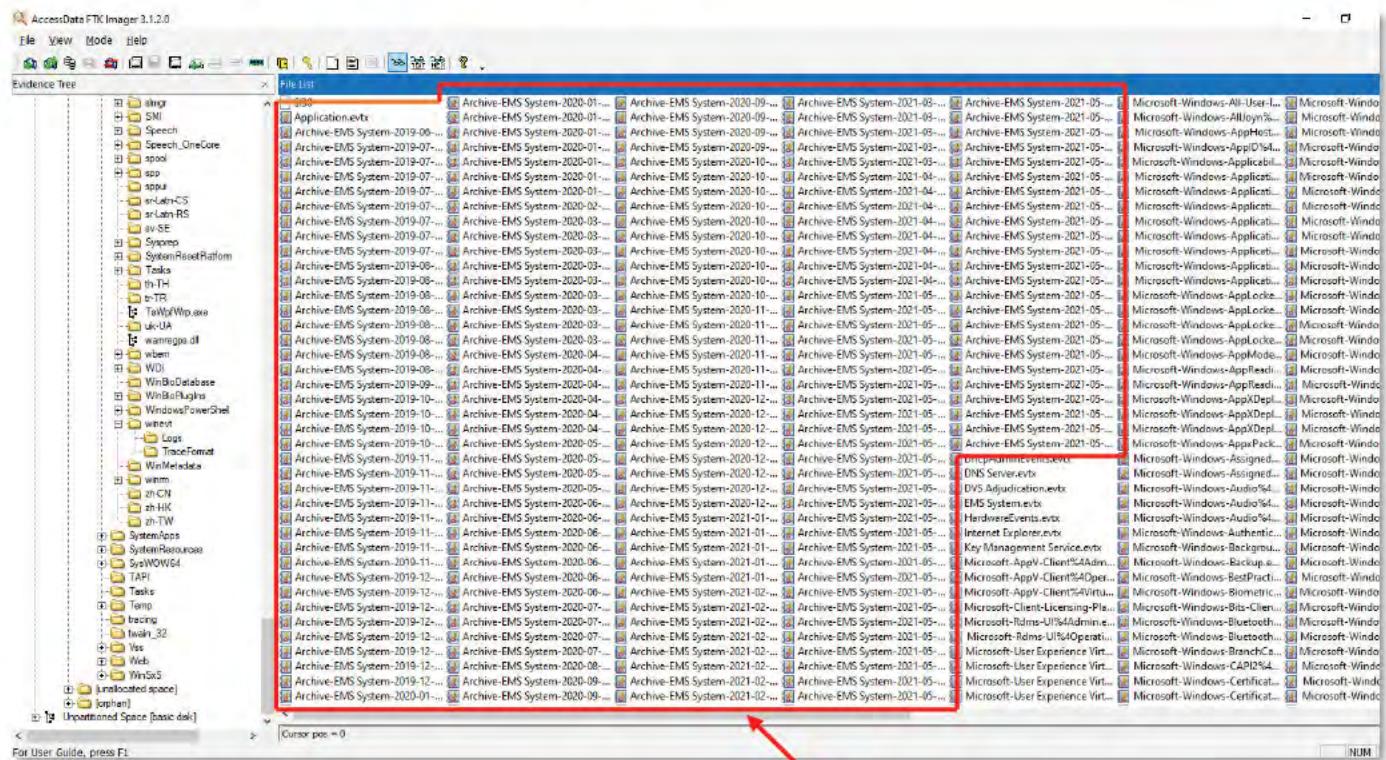
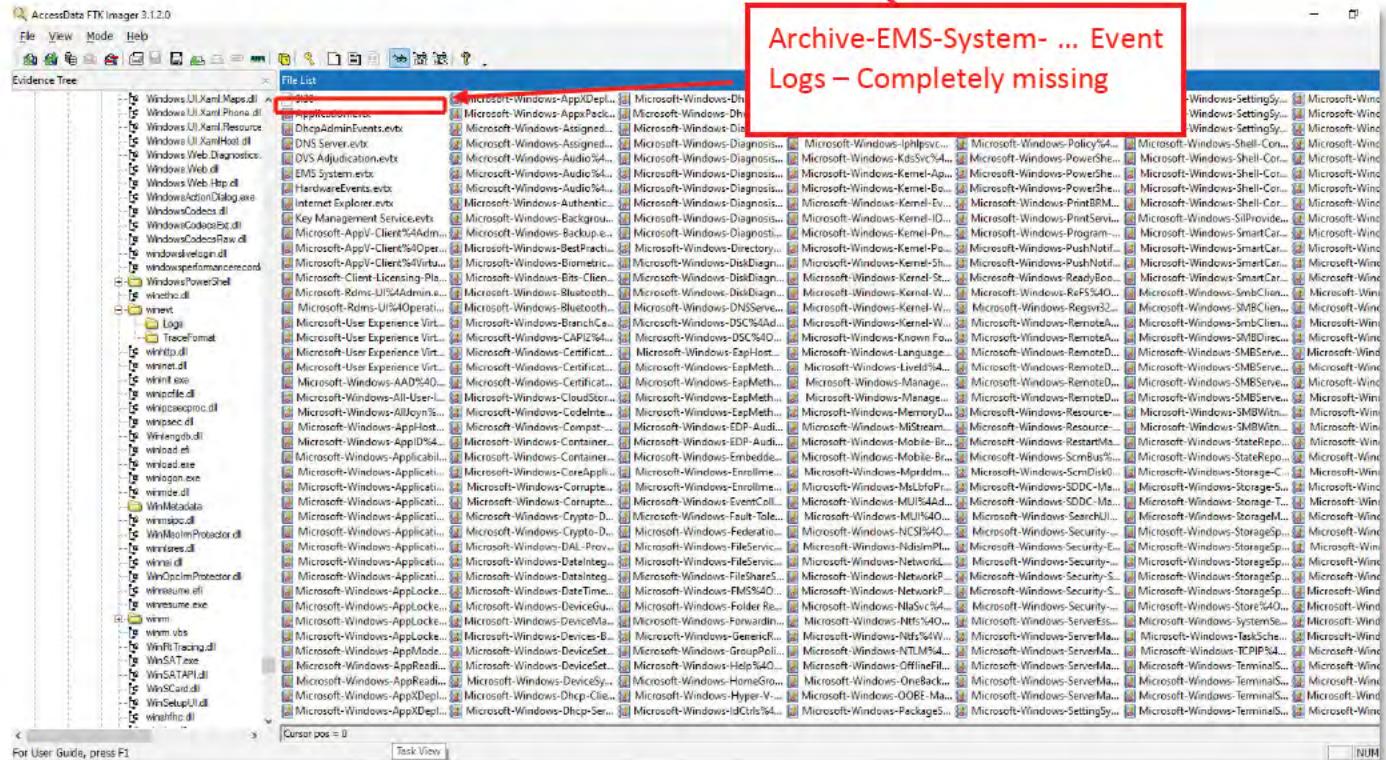


Figure 42 - EMS Server (5.13) List of .evtx Event Log Files After



This list that follows this paragraph is a comparison of the Before and After forensic images of the Mesa County EMS Server. It is a comparative list of files that were deleted – either deliberately erased or overwritten with disregard for the preservation of these files, some of which contain ELECTION RELATED data. A readable list is in Appendix C.

Each line in the image below is the full path listing (e.g., comparison of file names, not content) to each one of the 580 files that end with the word ".evtx" found on the EMS Server before the Dominion update was applied. 190 Event Log Files were deleted.

The Color code shows their status After Dominion's update. Of all the files on the server Before the update – files highlighted in Green are still present (although possibly changed) on the server after the update, while files highlighted in light red have been overwritten and are deleted and not present in the image After the update.

Logs\Microsoft-Windows-Kernel-WHEA%4Errors.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-TaskScheduler%4
Logs\Key Management Service.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-VDRVROOT%4Op
Logs\Application.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-VHDMP-Operatio
Logs\HardwareEvents.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-AppXDeployment
Logs\Internet Explorer.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-AppXDeployment
Logs\Microsoft-Client-Licensing-Platform%4Admin.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-International%40
Logs\Microsoft-Windows-Application-Experience%4Program-Compatibility-Assistant.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-MUI%4Operation
Logs\Microsoft-Windows-AppModel-Runtime%4Admin.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-MUI%4Admin.evt
Logs\Microsoft-Windows-AppReadiness%4Admin.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Firewal
Logs\Microsoft-Windows-AppXDeployment%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Iphlpsvc%4Opera
Logs\Microsoft-Windows-AppXDeploymentServer%4Restricted.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-WMI-Activity%4C
Logs\Microsoft-Windows-CodeIntegrity%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-AppReadiness%4
Logs\Microsoft-Windows-Containers-Wcifs%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-AppReadiness%40
Logs\Microsoft-Windows-Containers-Wcnfs%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-ApplicationResou
Logs\Microsoft-Windows-DeviceManagement-Enterprise-Diagnostics-Provider%4Admin.evtx	Windows\System32\winevt\Logs\Microsoft-Client-Licensing-Platform%4
Logs\Microsoft-Windows-Crypto-DPAPI%4BackUpKeySvc.evtx	Windows\System32\winevt\Logs\System.evtx
Logs\Microsoft-Windows-Crypto-DPAPI%4Operational.evtx	Windows\System32\winevt\Logs\Application.evtx
Logs\Microsoft-Windows-DeviceSetupManager%4Admin.evtx	Windows\System32\winevt\Logs\Security.evtx
Logs\Microsoft-Windows-DeviceSetupManager%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Dhcpv6-Client%4
Logs\Microsoft-Windows-ApplicationResourceManagementSystem%4Operational.evtx	Windows\System32\winevt\Logs\Windows PowerShell.evtx
Logs\Microsoft-Windows-Dhcp-Client%4Admin.evtx	Windows\System32\winevt\Logs\Key Management Service.evtx
Logs\Microsoft-Windows-Dhcpv6-Client%4Admin.evtx	Windows\System32\winevt\Logs\Internet Explorer.evtx
Logs\Microsoft-Windows-Hyper-V-Guest-Drivers%4Admin.evtx	Windows\System32\winevt\Logs\HardwareEvents.evtx
Logs\Microsoft-Windows-International%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Wcmsvc%4Opera
Logs\Microsoft-Windows-AppReadiness%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Application-Exper
Logs\Microsoft-Windows-Kernel-Boot%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Program-Compat
Logs\Microsoft-Windows-Kernel-IO%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Dhcp-Client%4Ad
Logs\Microsoft-Windows-Kernel-EventTracing%4Admin.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-TerminalServices
Logs\Microsoft-Windows-Kernel-Power%4Thermal-Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-TerminalServices
Logs\Microsoft-Windows-Kernel-ShimEngine%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-WinRM%4Operat
Logs\Microsoft-Windows-Kernel-StoreMgr%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Windows Defend
Logs\Microsoft-Windows-AppXDeploymentServer%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Windows Defend
Logs\Microsoft-Windows-Kernel-WHEA%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-UserPnp%4Device
Logs\Microsoft-Windows-Known Folders API Service.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-UserPnp%4Actio
Logs\Microsoft-Windows-Lived%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-DeviceManageme
Logs\Microsoft-Windows-MUI%4Admin.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Kernel-Power%4
Logs\Microsoft-Windows-GroupPolicy%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Kernel-Boot%4Op
Logs\Microsoft-Windows-MUI%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-StateRepository%
Logs\Microsoft-Windows-NCI%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-StateRepository%
Logs\Microsoft-Windows-NetworkProfile%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Kernel-Pn%4Cor
Logs\Microsoft-Windows-Ntfs%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Kernel-ShimEngin
Logs\Microsoft-Windows-Ntfs%4WHC.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Ntfs%4Operat
Logs\Microsoft-Windows-Program-Compatibility-Assistant%4CompatAfterUpgrade.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Ntfs%4WHC.evtx
Logs\Microsoft-Windows-RemoteDesktopServices-RdpCoreTS%4Admin.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-VolumeSnapshot
Logs\Microsoft-Windows-SettingSync%4Debug.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Kernel-IO%4Oper
Logs\Microsoft-Windows-RemoteDesktopServices-RdpCoreTS%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-CodeIntegrity%4C
Logs\Microsoft-Windows-Kernel-PnP%4Configuration.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Kernel-WHEA%4E
Logs\Microsoft-Windows-SettingSync%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Kernel-WHEA%4C
Logs\Microsoft-Windows-Shell-Core%4ActionCenter.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Firewal
Logs\Microsoft-Windows-Shell-Core%4AppDefaults.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-NCSI%4Operat
Logs\Microsoft-Windows-Shell-Core%4LogonTasksChannel.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-WinInet-Config%
Logs\Microsoft-Windows-Shell-Core%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Crypto-DPAPI%4C
Logs\Microsoft-Windows-SmbClient%4Connectivity.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Crypto-DPAPI%4E
Logs\Microsoft-Windows-SMBClient%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-DeviceSetupMan
Logs\Microsoft-Windows-SmbClient%4Security.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-DeviceSetupMan
Logs\Microsoft-Windows-SMBServer%4Audit.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Containers-Wcifs
Logs\Microsoft-Windows-SMBServer%4Connectivity.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Containers-Wcnfs
Logs\Microsoft-Windows-SMBServer%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-GroupPolicy%4O

Logs\Microsoft-Windows-SMBServer%4Security.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-User Profile Servi
Logs\Microsoft-Windows-SMBWitnessClient%4Admin.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Livelid%4Operati
Logs\Microsoft-Windows-SMBWitnessClient%4Informational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-SMBClient%4Oper
Logs\Microsoft-Windows-StateRepository%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-SmbClient%4Con
Logs\Microsoft-Windows-StateRepository%4Restricted.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-SmbClient%4Secu
Logs\Microsoft-Windows-TaskScheduler%4Maintenance.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Winlogon%4Oper
Logs\Microsoft-Windows-TerminalServices-LocalSessionManager%4Admin.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-SettingSync%64Oper
Logs\Microsoft-Windows-TerminalServices-LocalSessionManager%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-SettingSync%4De
Logs\Microsoft-Windows-TerminalServices-RemoteConnectionManager%4Admin.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-DateTimeControl
Logs\Microsoft-Windows-TerminalServices-RemoteConnectionManager%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Known Folders A
Logs\Microsoft-Windows-Store%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Shell-Core%64Acti
Logs\Microsoft-Windows-UniversalTelemetryClient%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Shell-Core%4Oper
Logs\Microsoft-Windows-User Profile Service%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Shell-Core%4App
Logs\Microsoft-Windows-UserPnp%4ActionCenter.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Shell-Core%4Log
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Logs\Microsoft-Windows-VolumeSnapshot-Driver%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-AppModel-Runti
Logs\Microsoft-Windows-Wcmsvc%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-ServerManager-D
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Logs\Microsoft-Windows-Windows Firewall With Advanced Security%4ConnectionSecurity.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-PushNotification
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Logs\Microsoft-Windows-WinRM%4Operational.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Application-Expe
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Logs\Windows PowerShell.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Security-SPP-UX
Logs\Microsoft-Windows-Windows Firewall With Advanced Security%4Firewall.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-BackgroundTaskI
Logs\System.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-ServerManager-N
Logs\Security.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-ServerManager-N
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Windows\System32\winevt\Logs\Archive-EMS System-2021-03-04-12-10-17-214.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Bluetooth-BthLE
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Windows\System32\winevt\Logs\Archive-EMS System-2021-05-01-21-14-15-340.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-EnrollmentPolicy
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Windows\System32\winevt\Logs\Archive-EMS System-2020-07-01-03-27-07-105 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Partition%4Diagnostic.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-04-09-17-04-07-509 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-PerceptionRuntime.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-09-07-12-48-391 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-PerceptionSensor.evt
Windows\System32\winevt\Logs\Archive-EMS System-2020-10-11-00-11-12-292 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-UserControlPanel.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-15-12-21-57-907 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Policy%4Operational.evt
Windows\System32\winevt\Logs\Archive-EMS System-2020-11-03-08-03-17-087 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-PowerShellDesiredDownloadManager%4Operational.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-22-18-13-07-673 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-PrintBRM%4Admin.evt
Windows\System32\winevt\Logs\Archive-EMS System-2020-08-27-17-53-57-312 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-PrintService%4Admin.evt
Windows\System32\winevt\Logs\Archive-EMS System-2020-09-30-01-16-19-620 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-ReadyBoost%4Operational.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-20-19-51-20-073 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-ReFS%4Operational.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-13-02-24-44-262 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Regsvr32%4Operational.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-15-23-57-17-682 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-RemoteAppAndDesktops.evt
Windows\System32\winevt\Logs\Archive-EMS System-2020-12-08-20-31-15-022 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-RemoteAppAndDesktops.evt
Windows\System32\winevt\Logs\Archive-EMS System-2020-12-09-21-34-01-652 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-RemoteDesktopSession.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-02-02-16-11-00-907 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-RemoteDesktopSession.evt
Windows\System32\winevt\Logs\Archive-EMS System-2020-12-10-17-14-18-337 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-RemoteDesktopSession.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-17-16-31-18-634 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-RemoteDesktopSession.evt
Windows\System32\winevt\Logs\Archive-EMS System-2020-12-09-17-35-55-190 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Resource-Exhaustion.evt
Windows\System32\winevt\Logs\Archive-EMS System-2020-12-10-17-26-50-697 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-ScmBus%4Certified.evt
Windows\System32\winevt\Logs\Archive-EMS System-2020-12-08-21-07-21-169 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-ScmDisk0101%4Config.evt
Windows\System32\winevt\Logs\Archive-EMS System-2020-12-09-22-01-49-473 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-SearchUI%4OpenFile.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-18-15-41-56-864 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Security-Audit-Computer.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-02-09-17-14-16-397 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Security-EnterpriseManagement.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-02-09-17-25-20-742 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Security-NetLogo.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-02-09-17-33-50-215 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Security-SPP-UX-Deployment.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-02-09-17-46-57-607 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Security-UserConsent.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-16-17-20-24-507 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-ServerEssentials-Logs.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-14-07-23-24-216 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-ServerManager-Config.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-12-14-51-41-139 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-SettingSync-AzureCloud.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-18-04-06-37-355 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-SettingSync-AzureCloud.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-18-09-54-24-839 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-SILProvider%4OpenFile.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-19-14-52-10-72 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-SmartCard-Audit.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-22-06-37-33-489 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-SmartCard-Device.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-12-03-16-22-000 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-SmartCard-TPM-1.2.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-21-19-02-14-166 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-SmartCard-TPM-1.2.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-22-00-50-01-529 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-SMBDirect%4Administrator.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-14-01-35-37-340 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-SMBWitnessClient.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-13-14-00-17-879 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-SMBWitnessClient.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-23-17-23-46-597 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Storage-Tiering%4Operational.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-12-20-37-42-553 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-StorageManager.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-12-09-03-54-186 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-StorageSpaces-Data.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-17-10-43-31-360 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-StorageSpaces-Data.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-17-04-55-44-339 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-StorageSpaces-Data.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-17-22-18-50-801 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-StorageSpaces-Data.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-13-19-47-50-347 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-SystemSettingsTransfer.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-15-06-34-10-708 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-TCP/IP%4Operational.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-20-02-28-13-043 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-TerminalServices.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-18-21-29-43-807 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-TerminalServices.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-15-00-46-23-325 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-TerminalServices.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-15-18-09-30-390 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-TerminalServices.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-20-14-03-47-942 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-TerminalServices.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-23-11-36-14-332 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-TerminalServices.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-16-11-32-36-872 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-TerminalServices.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-20-08-16-00-636 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-TerminalServices.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-23-05-48-27-189 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-TerminalServices.evt
Windows\System32\winevt\Logs\Archive-EMS System-2021-05-22-12-25-20-731 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-TerminalServices.evt
Windows\System32\winevt\Logs\Microsoft-Windows-UniversalTelemetryClient%4Operational.evt	Windows\System32\winevt\Logs\Microsoft-Windows-TerminalServices.evt
Windows\System32\winevt\Logs\Microsoft-Windows-NetworkProfile%4Operational.evt	Windows\System32\winevt\Logs\Microsoft-Windows-TerminalServices.evt
Windows\System32\winevt\Logs\Microsoft-Windows-Kernel-StoreMgr%4Operational.evt	Windows\System32\winevt\Logs\Microsoft-Windows-TerminalServices.evt
Windows\System32\winevt\Logs\Microsoft-Windows-SMBServer%4Operational.evt	Windows\System32\winevt\Logs\Microsoft-Windows-TZSync%4Operational.evt
Windows\System32\winevt\Logs\Archive-EMS System-2019-07-19-09-27-36-681 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-TZUtil%4Operational.evt
Windows\System32\winevt\Logs\Microsoft-Windows-SMBServer%4Security.evt	Windows\System32\winevt\Logs\Microsoft-Windows-UAC%4Operational.evt
Windows\System32\winevt\Logs\Archive-EMS System-2019-07-23-03-48-10-012 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-UAC-FileVirtualization.evt
Windows\System32\winevt\Logs\Microsoft-Windows-SMBServer%4Connectivity.evt	Windows\System32\winevt\Logs\Microsoft-Windows-UserDeviceRegistration.evt
Windows\System32\winevt\Logs\Archive-EMS System-2019-08-14-17-50-17-089 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-User-Loader%4Operational.evt
Windows\System32\winevt\Logs\Archive-EMS System-2019-08-22-06-31-22-632 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-VerifyHardware.evt
Windows\System32\winevt\Logs\Archive-EMS System-2019-08-03-10-49-41-423 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Volume%4Diagnostic.evt
Windows\System32\winevt\Logs\Microsoft-Windows-Dhcp-Server%4Operational.evt	Windows\System32\winevt\Logs\Microsoft-Windows-VPN-Client%4Operational.evt
Windows\System32\winevt\Logs\Microsoft-Windows-Dhcp-Server%4FilterNotifications.evt	Windows\System32\winevt\Logs\Microsoft-Windows-VPN%4Operational.evt
Windows\System32\winevt\Logs\DHcpAdminEvents.evt	Windows\System32\winevt\Logs\Microsoft-Windows-WFP%4Operational.evt
Windows\System32\winevt\Logs\Archive-EMS System-2019-08-26-00-51-55-728 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Win32k%4Operational.evt
Windows\System32\winevt\Logs\Archive-EMS System-2019-08-07-05-09-14-598 evtx	Windows\System32\winevt\Logs\Microsoft-Windows-WindowsSystemEvents.evt
Windows\System32\winevt\Logs\DNS Server.evt	Windows\System32\winevt\Logs\Microsoft-Windows-Winsock-WS2HELEVT.evt

Windows\System32\winevt\Logs\Microsoft-Windows-DNSServer%4Audit.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Wired-AutoConfig%4
Windows\System32\winevt\Logs\Archive-EMS System-2019-08-10-23-29-48-856.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-Workplace Join%4Ad
Windows\System32\winevt\Logs\Archive-EMS System-2019-08-18-12-10-49-482.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-WPD-ClassInstaller%4
Windows\System32\winevt\Logs\Archive-EMS System-2019-09-02-13-32-58-546.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-WPD-CompositeClass
Windows\System32\winevt\Logs\Archive-EMS System-2019-08-29-19-12-25-021.evtx	Windows\System32\winevt\Logs\Microsoft-Windows-WPD-MTPClassDriver
Windows\System32\winevt\Logs\Microsoft-Windows-SMBServer%4Audit.evtx	Windows\System32\winevt\Logs\SMSApi.evtx

Analysis Summary

Analysis of the Mesa County Dominion Voting Systems EMS server identified that extensive deletion of both election data and election-related data, comprising election records which must and should have been preserved under Federal and Colorado law, has occurred either as a result of or coincident with the vendor's and CO Secretary of State's modification of the system from version 5.11-CO to 5.13. This deleted data is critical to any effort to reconstruct events taking place on the voting systems, and to determine if unauthorized access or operation of the voting systems took place.

Furthermore, the EMS server application logging functions are configured to "Overwrite events as needed" if arbitrarily-selected file storage sizes are exceeded, which could predictably and likely has resulted in the systematic, automated deletion of logfile content comprising election-related data.

This systemic deletion of logfile data requires additional investigation.

CONCLUSION

This forensic examination found that significant election record preservation requirements under the 2002 VSS and Federal and state law HAVE NOT BEEN MET and further that destruction of Election-Related Data, specifically critical logfiles, has occurred. This destruction is not incidental or minor but is *highly significant*.

These findings have been demonstrated in this report and evidence has been presented demonstrating *conclusively to both computer systems experts as well as legal professionals and the general public at large* that the facts in these findings support the conclusions that:

- 1) Election-related data and election data explicitly required to be preserved, as described in the 2002 VSS criteria referenced in this section, HAS BEEN DESTROYED IN VIOLATION OF THE LAW, and
- 2) The specific configuration settings of the server examined lead to the understanding that Certification Requirements for Voting Systems have likely not been met despite this system having been certified and thereby approved for use in Colorado by the Colorado Secretary of State.

Further investigation is required to determine the full scope of non-compliance with legal mandates for voting systems and election records, and whether the non-compliance is deliberate or simply negligent.

APPENDIX A. DELETED ".LOG" FILES AFTER DOMINION TRUSTED BUILD UPDATE

Deleted files are highlighted in light red. Files highlighted in green are still present in the server image.

inetpub\logs\LogFiles\W3SVC1\u_ex210406.log
inetpub\logs\LogFiles\W3SVC1\u_ex200903.log
inetpub\logs\LogFiles\W3SVC1\u_ex191021.log
inetpub\logs\LogFiles\W3SVC1\u_ex191101.log
inetpub\logs\LogFiles\W3SVC1\u_ex201028.log
inetpub\logs\LogFiles\W3SVC1\u_ex191025.log
inetpub\logs\LogFiles\W3SVC1\u_ex191023.log
inetpub\logs\LogFiles\W3SVC1\u_ex200522.log
inetpub\logs\LogFiles\W3SVC1\u_ex191126.log
inetpub\logs\LogFiles\W3SVC1\u_ex200819.log
inetpub\logs\LogFiles\W3SVC1\u_ex191028.log
inetpub\logs\LogFiles\W3SVC1\u_ex210104.log
inetpub\logs\LogFiles\W3SVC1\u_ex191022.log
inetpub\logs\LogFiles\W3SVC1\u_ex200625.log
inetpub\logs\LogFiles\W3SVC1\u_ex210211.log
inetpub\logs\LogFiles\W3SVC1\u_ex201008.log
inetpub\logs\LogFiles\W3SVC1\u_ex191114.log
inetpub\logs\LogFiles\W3SVC1\u_ex200826.log
inetpub\logs\LogFiles\W3SVC1\u_ex210223.log
inetpub\logs\LogFiles\W3SVC1\u_ex210224.log
inetpub\logs\LogFiles\W3SVC1\u_ex210205.log
inetpub\logs\LogFiles\W3SVC1\u_ex210318.log
inetpub\logs\LogFiles\W3SVC1\u_ex200520.log
inetpub\logs\LogFiles\W3SVC1\u_ex201208.log
inetpub\logs\LogFiles\W3SVC1\u_ex210407.log
inetpub\logs\LogFiles\W3SVC1\u_ex191030.log
inetpub\logs\LogFiles\W3SVC1\u_ex191031.log
inetpub\logs\LogFiles\W3SVC1\u_ex191106.log
inetpub\logs\LogFiles\W3SVC1\u_ex191105.log
inetpub\logs\LogFiles\W3SVC1\u_ex191029.log
inetpub\logs\LogFiles\W3SVC1\u_ex191104.log
inetpub\logs\LogFiles\W3SVC1\u_ex200730.log
inetpub\logs\LogFiles\W3SVC1\u_ex210512.log
inetpub\logs\LogFiles\W3SVC1\u_ex201103.log

inetpub\logs\LogFiles\W3SVC1\u_ex191107.log
inetpub\logs\LogFiles\W3SVC1\u_ex191115.log
inetpub\logs\LogFiles\W3SVC1\u_ex200929.log
inetpub\logs\LogFiles\W3SVC1\u_ex200930.log
inetpub\logs\LogFiles\W3SVC1\u_ex200813.log
inetpub\logs\LogFiles\W3SVC1\u_ex210523.log
inetpub\logs\LogFiles\W3SVC1\u_ex200127.log
inetpub\logs\LogFiles\W3SVC1\u_ex200224.log
inetpub\logs\LogFiles\W3SVC1\u_ex201023.log
inetpub\logs\LogFiles\W3SVC1\u_ex200618.log
inetpub\logs\LogFiles\W3SVC1\u_ex210212.log
inetpub\logs\LogFiles\W3SVC1\u_ex200302.log
inetpub\logs\LogFiles\W3SVC1\u_ex200124.log
inetpub\logs\LogFiles\W3SVC1\u_ex200303.log
inetpub\logs\LogFiles\W3SVC1\u_ex210303.log
inetpub\logs\LogFiles\W3SVC1\u_ex200227.log
inetpub\logs\LogFiles\W3SVC1\u_ex201113.log
inetpub\logs\LogFiles\W3SVC1\u_ex201214.log
inetpub\logs\LogFiles\W3SVC1\u_ex201218.log
inetpub\logs\LogFiles\W3SVC1\u_ex200528.log
inetpub\logs\LogFiles\W3SVC1\u_ex201222.log
inetpub\logs\LogFiles\W3SVC1\u_ex200131.log
inetpub\logs\LogFiles\W3SVC1\u_ex210105.log
inetpub\logs\LogFiles\W3SVC1\u_ex201221.log
inetpub\logs\LogFiles\W3SVC1\u_ex200228.log
inetpub\logs\LogFiles\W3SVC1\u_ex200304.log
inetpub\logs\LogFiles\W3SVC1\u_ex200518.log
inetpub\logs\LogFiles\W3SVC1\u_ex210302.log
inetpub\logs\LogFiles\W3SVC1\u_ex200715.log
inetpub\logs\LogFiles\W3SVC1\u_ex200624.log
inetpub\logs\LogFiles\W3SVC1\u_ex210113.log
inetpub\logs\LogFiles\W3SVC1\u_ex200519.log
inetpub\logs\LogFiles\W3SVC1\u_ex200320.log
inetpub\logs\LogFiles\W3SVC1\u_ex210106.log

inetpub\logs\LogFiles\W3SVC1\u_ex210222.log
inetpub\logs\LogFiles\W3SVC1\u_ex210412.log
inetpub\logs\LogFiles\W3SVC1\u_ex200827.log
inetpub\logs\LogFiles\W3SVC1\u_ex200623.log
inetpub\logs\LogFiles\W3SVC1\u_ex210210.log
inetpub\logs\LogFiles\W3SVC1\u_ex200617.log
inetpub\logs\LogFiles\W3SVC1\u_ex200515.log
inetpub\logs\LogFiles\W3SVC1\u_ex200731.log
inetpub\logs\LogFiles\W3SVC1\u_ex201001.log
inetpub\logs\LogFiles\W3SVC1\u_ex201215.log
inetpub\logs\LogFiles\W3SVC1\u_ex200521.log
inetpub\logs\LogFiles\W3SVC1\u_ex210111.log
inetpub\logs\LogFiles\W3SVC1\u_ex200526.log
inetpub\logs\LogFiles\W3SVC1\u_ex200601.log
inetpub\logs\LogFiles\W3SVC1\u_ex200612.log
inetpub\logs\LogFiles\W3SVC1\u_ex210115.log
inetpub\logs\LogFiles\W3SVC1\u_ex210112.log
inetpub\logs\LogFiles\W3SVC1\u_ex210107.log
inetpub\logs\LogFiles\W3SVC1\u_ex200616.log
inetpub\logs\LogFiles\W3SVC1\u_ex210209.log
inetpub\logs\LogFiles\W3SVC1\u_ex210409.log
inetpub\logs\LogFiles\W3SVC1\u_ex200630.log
inetpub\logs\LogFiles\W3SVC1\u_ex200708.log
inetpub\logs\LogFiles\W3SVC1\u_ex200701.log
inetpub\logs\LogFiles\W3SVC1\u_ex210511.log
inetpub\logs\LogFiles\W3SVC1\u_ex200924.log
inetpub\logs\LogFiles\W3SVC1\u_ex201019.log
inetpub\logs\LogFiles\W3SVC1\u_ex201029.log
inetpub\logs\LogFiles\W3SVC1\u_ex201109.log
inetpub\logs\LogFiles\W3SVC1\u_ex201123.log
inetpub\logs\LogFiles\W3SVC1\u_ex201026.log
inetpub\logs\LogFiles\W3SVC1\u_ex201120.log
inetpub\logs\LogFiles\W3SVC1\u_ex201209.log
inetpub\logs\LogFiles\W3SVC1\u_ex201102.log

inetpub\logs\LogFiles\W3SVC1\u_ex210301.log
inetpub\logs\LogFiles\W3SVC1\u_ex210330.log
inetpub\logs\LogFiles\W3SVC1\u_ex210329.log
inetpub\logs\LogFiles\W3SVC1\u_ex210402.log
inetpub\logs\LogFiles\W3SVC1\u_ex210114.log
inetpub\logs\LogFiles\W3SVC1\u_ex210108.log
inetpub\logs\LogFiles\W3SVC1\u_ex210405.log
inetpub\logs\LogFiles\W3SVC1\u_ex210310.log
inetpub\logs\LogFiles\W3SVC1\u_ex210311.log
inetpub\logs\LogFiles\W3SVC1\u_ex210304.log
inetpub\logs\LogFiles\W3SVC1\u_ex210315.log
inetpub\logs\LogFiles\W3SVC1\u_ex210309.log
inetpub\logs\LogFiles\W3SVC1\u_ex210331.log
inetpub\logs\LogFiles\W3SVC1\u_ex210415.log
inetpub\logs\LogFiles\W3SVC1\u_ex210510.log
inetpub\logs\LogFiles\W3SVC1\u_ex190903.log
inetpub\logs\LogFiles\W3SVC1\u_ex190625.log
inetpub\logs\LogFiles\W3SVC1\u_ex190610.log
inetpub\logs\LogFiles\W3SVC1\u_ex190611.log

Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\VC10Redist_Cpu64_1.log

Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\VC10Redist_Cpu32_1.log

Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\VSHelp_Cpu64_1.log

Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\SqlSupport_Cpu64_1.log

Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\sql_tools_extensions_Cpu64_1.log

Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\sql_tools_extensions_loc_Cpu64_1033_1.log

Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\sql_common_core_Cpu64_1.log

Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\conn_info_Cpu64_1.log

Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\conn_info_loc_Cpu64_1033_1.log

Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\sql_batchparser_Cpu64_1.log

Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\sql_engine_core_shared_Cpu64_1.log

Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\sql_common_core_loc_Cpu64_1033_1.log

Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\RsFx_Cpu64_1.log

Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\sql_engine_core_inst_Cpu64_1.log

Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\SqlDom_Cpu64_1.log

Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\sql_engine_core_shared_loc_Cpu64_1033_1.log
Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\sql_engine_core_inst_loc_Cpu64_1033_1.log
Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\sql_diag_Cpu64_1.log
Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\sql_rs_Cpu64_1.log
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Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_120309\sql_xevent_Cpu64_1.log
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Program Files\Microsoft SQL Server\130\Setup Bootstrap\Log\20190610_125107\MSSQLSERVER\sql_rs_Cpu64_1.log
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Users\emsadmin\AppData\Local\Microsoft\Windows\WebCache\V010001E.log
Users\emsadmin\AppData\Local\Microsoft\Windows\WebCache\V01.log
Users\emsadmin\AppData\Local\Microsoft\Windows\WebCache\V01tmp.log
Users\emsadmin\AppData\Local\Microsoft\Windows\Windows Anytime Upgrade\Upgrade.log
Users\emsadmin\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG1
Users\emsadmin\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG2
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Users\emsadmin\AppData\Local\Packages\Microsoft.AAD.BrokerPlugin_cw5n1h2txyewy\Settings\settings.dat.LOG2
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Users\emsadmin\AppData\Local\Packages\Microsoft.Windows.Apprep.ChxApp_cw5n1h2txyewy\Settings\settings.dat.LOG2
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Users\emsadmin\AppData\Local\Packages\Microsoft.Windows.SecondaryTileExperience_cw5n1h2txyewy\Settings\settings.dat.LOG2
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 Users\emsadmin\AppData\Local\Packages\Microsoft.XboxGameCallableUI_cw5n1h2txyewy\Settings\settings.dat.LOG1
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 Users\emsadmin\AppData\Local\Packages\Windows.PrintDialog_cw5n1h2txyewy\Settings\settings.dat.LOG1
 Users\emsadmin\AppData\Local\Packages\Windows.PrintDialog_cw5n1h2txyewy\Settings\settings.dat.LOG2
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 Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_3_DACFramework.msi.log
 Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_4_SQLServerBestPracticesPolicies.msi.log
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 Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_6_sql_diag_x64.log
 Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_7_adalsql_x64.log
 Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_22_sql_as_oledb_x86.log
 Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_23_sql_common_core_x86.log
 Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_24_sql_common_core_loc_x86.log
 Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_30_sql_ssms_extensions_loc_x86.log
 Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_31_sql_ssms_x64.log
 Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_33_sql_tools_connectivity_x64.log
 Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_18_smo_extensions_loc_x64.log
 Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_2_msodbcsql.msi.log
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 Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637.log
 Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_0_SQLSysClrTypes.msi.log
 Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_1_sqlcli.msi.log
 Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_10_sql_batchparser_x64.log
 Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_11_sql_xevent_x64.log
 Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_12_sql_xevent_loc_x64.log

Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_13_sql_is_scale_management_x64.log
Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_14_sql_is_scale_management_loc_x64.log
Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_15_sql_dmf_x64.log
Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_16_sql_dmf_loc_x64.log
Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_17_smo_extensions_x64.log
Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_19_smo_x64.log
Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_20_smo_loc_x64.log
Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_34_sql_tools_connectivity_loc_x64.log
Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_21_sql_as_oledb_x64.log
Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_35_ssms_rs_x64.log
Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_36_ssms_as_x64.log
Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_29_sql_ssms_extensions_x86.log
Users\emsadmin\AppData\Local\Temp\SsmsSetup\SSMS-Setup-ENU_20190610125637_37_SsmsPostInstall_x64.log
Users\emsadmin\AppData\Local\Temp\VSD329B.tmp\install.log
Users\emsadmin\AppData\Local\Temp\VSDA070.tmp\install.log
Users\emsadmin\AppData\Local\Temp\VsHub\Microsoft.VisualStudio.ExtensionManager.HubServiceModule-kitajpem.rgb.log
Users\emsadmin\AppData\Local\Temp\SqlSetup_1.log
Users\emsadmin\AppData\Local\Temp\dd_vc赤ist_amd64_20190610120224_000_vcRuntimeMinimum_x64.log
Users\emsadmin\AppData\Local\Temp\dd_vc赤ist_amd64_20190610120224_001_vcRuntimeAdditional_x64.log
Users\emsadmin\AppData\Local\Temp\SqlSetup.log
Users\emsadmin\AppData\Local\Temp\StructuredQuery.log
Users\emsadmin\AppData\Local\Temp\dd_vc赤ist_amd64_20190610120224.log
Users\emsadmin\AppData\Local\Temp\dd_vc赤ist_x86_20190610120041.log
Users\emsadmin\AppData\Local\Temp\dd_vc赤ist_x86_20190610120041_0_vcRuntimeMinimum_x86.log
Users\emsadmin\AppData\Local\Temp\dd_vc赤ist_x86_20190610120041_1_vcRuntimeAdditional_x86.log
Users\emsadmin\AppData\Local\Temp\dd_vc赤ist_amd64_20190610120118.log
Users\emsadmin\AppData\Local\Temp\dd_vc赤ist_amd64_20190610120118_0_vcRuntimeMinimum_x64.log
Users\emsadmin\AppData\Local\Temp\wmsetup.log
Users\emsadmin\AppData\Local\Temp\dd_vc赤ist_amd64_20190610120118_1_vcRuntimeAdditional_x64.log
Users\emsadmin\AppData\Local\Temp\dd_vc赤ist_x86_20190610120157.log
Users\emsadmin\AppData\Local\Temp\dd_vc赤ist_x86_20190610120157_000_vcRuntimeMinimum_x86.log
Users\emsadmin\AppData\Local\Temp\dd_vc赤ist_x86_20190610120157_001_vcRuntimeAdditional_x86.log
Users\emsadmin\AppData\Local\Temp\dd_vc赤ist_x86_20190610125911.log
Users\emsadmin\AppData\Local\Temp\dd_vc赤ist_amd64_20190610125911.log

Users\emsadmin\AppData\Local\Temp\dd_vcredict_amd64_20190610125912.log
Users\emsadmin\AppData\Local\Temp\dd_vcredict_x86_20190610130115.log
Users\emsadmin\AppData\Local\Temp\MpSigStub.log
Users\emsadmin\AppData\Local\TileDataLayer\Database\EDB.log
Users\emsadmin\AppData\Local\TileDataLayer\Database\EDBtmp.log
Users\emsadmin\AppData\Local\TileDataLayer\Database\EDB00003.log
Users\emsadmin\Documents\EMS\Log\Debug.log
Users\emsadmin\Documents\EMS\Log\Info.log
Users\emsadmin\ntuser.dat.LOG1
Users\emsadmin\ntuser.dat.LOG2
Users\emsadmin01\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG1
Users\emsadmin01\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG2
Users\emsadmin01\ntuser.dat.LOG1
Users\emsadmin01\ntuser.dat.LOG2
Users\emsadmin02\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG1
Users\emsadmin02\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG2
Users\emsadmin02\ntuser.dat.LOG1
Users\emsadmin02\ntuser.dat.LOG2
Users\emsasuser\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG1
Users\emsasuser\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG2
Users\emsasuser\ntuser.dat.LOG1
Users\emsasuser\ntuser.dat.LOG2
Users\emssqluser\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG1
Users\emssqluser\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG2
Users\emssqluser\ntuser.dat.LOG1
Users\emssqluser\ntuser.dat.LOG2
Users\emsuser01\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG1
Users\emsuser01\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG2
Users\emsuser01\ntuser.dat.LOG1
Users\emsuser01\ntuser.dat.LOG2
Users\emsuser02\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG1
Users\emsuser02\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG2
Users\emsuser02\ntuser.dat.LOG1
Users\emsuser02\ntuser.dat.LOG2

Users\MSSQLSERVER\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG1
Users\MSSQLSERVER\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG2
Users\MSSQLSERVER\ntuser.dat.LOG1
Users\MSSQLSERVER\ntuser.dat.LOG2
Users\ReportServer\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG1
Users\ReportServer\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG2
Users\ReportServer\ntuser.dat.LOG1
Users\ReportServer\ntuser.dat.LOG2
Users\SQLSERVERAGENT\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG1
Users\SQLSERVERAGENT\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG2
Users\SQLSERVERAGENT\ntuser.dat.LOG1
Users\SQLSERVERAGENT\ntuser.dat.LOG2
Users\SQLTELEMETRY\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG1
Users\SQLTELEMETRY\AppData\Local\Microsoft\Windows\UsrClass.dat.LOG2
Users\SQLTELEMETRY\ntuser.dat.LOG1
Users\SQLTELEMETRY\ntuser.dat.LOG2
VirtualDirectories\EMSAplicationServer\Log\Error.4.log
VirtualDirectories\EMSAplicationServer\Log\Error.log
VirtualDirectories\EMSAplicationServer\Log\Error.12.log
VirtualDirectories\EMSAplicationServer\Log\Error.14.log
VirtualDirectories\EMSAplicationServer\Log\Error.5.log
VirtualDirectories\EMSAplicationServer\Log\Error.8.log
VirtualDirectories\EMSAplicationServer\Log\Error.0.log
VirtualDirectories\EMSAplicationServer\Log\Error.11.log
VirtualDirectories\EMSAplicationServer\Log\Error.10.log
VirtualDirectories\EMSAplicationServer\Log\Error.9.log
VirtualDirectories\EMSAplicationServer\Log\Error.3.log
VirtualDirectories\EMSAplicationServer\Log\Error.6.log
VirtualDirectories\EMSAplicationServer\Log\Error.7.log
VirtualDirectories\EMSAplicationServer\Log\Error.2.log
VirtualDirectories\EMSAplicationServer\Log\Error.1.log
VirtualDirectories\EMSAplicationServer\Log\Error.13.log
VirtualDirectories\EMSAplicationServer\Log\Warn.log
VirtualDirectories\EMSAplicationServer\Log\Error.14.log

Windows\appcompat\Programs\Amcache.hve.LOG1
Windows\appcompat\Programs\Amcache.hve.LOG2
Windows\assembly\GAC_MSIL\System.IO.Log
Windows\assembly\NativeImages_v2.0.50727_32\System.IO.Log
Windows\assembly\NativeImages_v2.0.50727_64\System.IO.Log
Windows\assembly\NativeImages_v4.0.30319_32\System.IO.Log
Windows\assembly\NativeImages_v4.0.30319_64\System.IO.Log
Windows\debug\sammui.log
Windows\debug\PASSWD.LOG
Windows\debug\NetSetup.LOG
Windows\DELL\UpdatePackage\log\BrcmSetup.log
Windows\INF\setupapi.dev.log
Windows\INF\setupapi.setup.log
Windows\Logs\CMS\CMS.log
Windows\Logs\CMS\CMSPersist_20191001155012.log
Windows\Logs\CMS\CMSPersist_20190625180445.log
Windows\Logs\DISM\dism.log
Windows\Logs\DPX\setupact.log
Windows\Logs\DPX\setuperr.log
Windows\Logs\SetupCleanupTask\setuperr.log
Windows\Logs\SetupCleanupTask\setupact.log
Windows\Microsoft.NET\assembly\GAC_MSIL\Microsoft.SqlServer.TransferLoginsTask
Windows\Microsoft.NET\assembly\GAC_MSIL\Microsoft.SqlServer.TransferLoginsTaskUI
Windows\Microsoft.NET\assembly\GAC_MSIL\Microsoft.VisualStudio.Dialogs
Windows\Microsoft.NET\assembly\GAC_MSIL\Microsoft.VisualStudio.ImageCatalog
Windows\Microsoft.NET\assembly\GAC_MSIL\Microsoft.VisualStudio.ProductKeyDialog
Windows\Microsoft.NET\assembly\GAC_MSIL\Microsoft.VisualStudio.Text.Logic
Windows\Microsoft.NET\assembly\GAC_MSIL\System.IO.Log
Windows\Microsoft.NET\Framework\v2.0.50727\ngen.log
Windows\Microsoft.NET\Framework\v4.0.30319\ngen.log
Windows\Microsoft.NET\Framework\v4.0.30319\ngen.old.log
Windows\Microsoft.NET\Framework\v4.0.30319\ngen.old.log
Windows\Microsoft.NET\Framework64\v2.0.50727\ngen.log
Windows\Microsoft.NET\Framework64\v4.0.30319\ngen.log

Windows\Microsoft.NET\Framework64\v4.0.30319\ngen.old.log
Windows\Panther\UnattendGC\setupact.log
Windows\Panther\UnattendGC\setuperr.log
Windows\Panther\DDACLSys.log
Windows\Panther\cbs.log
Windows\Panther\setupact.log
Windows\Panther\setuperr.log
Windows\Performance\WinSAT\winsat.log
Windows\security\database\edb.log
Windows\security\database\edbtmp.log
Windows\security\logs\scssetup.log
Windows\ServiceProfiles\LocalService\NTUSER.DAT.LOG1
Windows\ServiceProfiles\LocalService\NTUSER.DAT.LOG2
Windows\ServiceProfiles\NetworkService\AppData\Local\Temp\MpCmdRun.log
Windows\ServiceProfiles\NetworkService\debug\NetSetup.LOG
Windows\ServiceProfiles\NetworkService\NTUSER.DAT.LOG2
Windows\ServiceProfiles\NetworkService\NTUSER.DAT.LOG1
Windows\SoftwareDistribution\DataStore\Logs\edb00222.log
Windows\SoftwareDistribution\DataStore\Logs\edb00227.log
Windows\SoftwareDistribution\DataStore\Logs\edb00223.log
Windows\SoftwareDistribution\DataStore\Logs\edb00224.log
Windows\SoftwareDistribution\DataStore\Logs\edb00225.log
Windows\SoftwareDistribution\DataStore\Logs\edb0022A.log
Windows\SoftwareDistribution\DataStore\Logs\edb0022C.log
Windows\SoftwareDistribution\DataStore\Logs\edb0022D.log
Windows\SoftwareDistribution\DataStore\Logs\edb00230.log
Windows\SoftwareDistribution\DataStore\Logs\edb.log
Windows\SoftwareDistribution\DataStore\Logs\edbtmp.log
Windows\SoftwareDistribution\DataStore\Logs\edb00226.log
Windows\SoftwareDistribution\DataStore\Logs\edb0022B.log
Windows\SoftwareDistribution\DataStore\Logs\edb00228.log
Windows\SoftwareDistribution\DataStore\Logs\edb00229.log
Windows\SoftwareDistribution\DataStore\Logs\edb0022E.log
Windows\SoftwareDistribution\DataStore\Logs\edb0022F.log

Windows\SoftwareDistribution\ReportingEvents.log
Windows\System32\catroot2\edb00018.log
Windows\System32\catroot2\edb0001B.log
Windows\System32\catroot2\edb0001C.log
Windows\System32\catroot2\edb0001D.log
Windows\System32\catroot2\edb.log
Windows\System32\catroot2\edb00013.log
Windows\System32\catroot2\edb00014.log
Windows\System32\catroot2\edb00015.log
Windows\System32\catroot2\edb00016.log
Windows\System32\catroot2\edb00017.log
Windows\System32\catroot2\edb00019.log
Windows\System32\catroot2\edb0001A.log
Windows\System32\catroot2\edbtmp.log
Windows\System32\config\RegBack\SECURITY.LOG1
Windows\System32\config\RegBack\SECURITY.LOG2
Windows\System32\config\RegBack\SOFTWARE.LOG1
Windows\System32\config\RegBack\SOFTWARE.LOG2
Windows\System32\config\RegBack\SYSTEM.LOG1
Windows\System32\config\RegBack\SYSTEM.LOG2
Windows\System32\config\RegBack\DEFAULT.LOG1
Windows\System32\config\RegBack\DEFAULT.LOG2
Windows\System32\config\RegBack\SAM.LOG1
Windows\System32\config\RegBack\SAM.LOG2
Windows\System32\config\BBI.LOG1
Windows\System32\config\BCD-Template.LOG
Windows\System32\config\DEFAULT.LOG2
Windows\System32\config\ELAM.LOG1
Windows\System32\config\SAM.LOG2
Windows\System32\config\SECURITY.LOG2
Windows\System32\config\DEFAULT.LOG1
Windows\System32\config\DRIVERS.LOG1
Windows\System32\config\SAM.LOG1
Windows\System32\config\COMPONENTS.LOG2
Windows\System32\config\SECURITY.LOG1

APPENDIX B. SUPPORTING DOCUMENTATION: FILE DETAILS AND HASH SETS FOR SCREENSHOTS

The files below provide integrity data for the graphic screenshots in this document. Each comma-separated-variable (csv) file listed here contain the file name with its full path (e.g., directory structure) and message digest hash values (MD5 and SHA1 algorithms). Due to the length of the data contained in these files, they are provided in a compact disc (CD) addendum to this report.

 Windows Defender Before.csv	 Windows Defender After.csv	 WebCache Before.csv	 WebCache After.csv	 Virtual Directories Before.csv	 Virtual Directories After.csv
 SSMS Install Log Before.csv	 SSMS Install Log After.csv	 SQLServer Logs Before.csv	 SQLServer Logs After.csv	 SQLServer Installation Logs Bef	 SQLServer Installation Logs Aft
 Iinetpub Before.csv	 Iinetpub After.csv	 Event Logs Before.csv	 Event Logs After.csv	 DHCP Before.csv	 DHCP After.csv
 Dell Server Update Logs Before.csv	 Dell Server Update Logs After.csv	 Databases Before.csv	 CBS Logs Before.csv	 CBS Logs After.csv	

APPENDIX C. MICROSOFT EVENT LOG FILES

Files in this list were ALL present in the EMS Server Before image. Files listed in RED were deleted or overwritten. Significantly, from their filenames alone, they are OBVIOUSLY Election-Related Records, "Archive-EMS-System-..."

Logs\Microsoft-Windows-Kernel-WHEA%4Errors.evtx
Logs\Key Management Service.evtx
Logs\Application.evtx
Logs\HardwareEvents.evtx
Logs\Internet Explorer.evtx
Logs\Microsoft-Client-Licensing-Platform%4Admin.evtx
Logs\Microsoft-Windows-Application-Experience%4Program-Compatibility-Assistant.evtx
Logs\Microsoft-Windows-AppModel-Runtime%4Admin.evtx
Logs\Microsoft-Windows-AppReadiness%4Admin.evtx
Logs\Microsoft-Windows-AppXDeployment%4Operational.evtx
Logs\Microsoft-Windows-AppXDeploymentServer%4Restricted.evtx
Logs\Microsoft-Windows-CodeIntegrity%4Operational.evtx
Logs\Microsoft-Windows-Containers-Wcifs%4Operational.evtx
Logs\Microsoft-Windows-Containers-Wcnfs%4Operational.evtx
Logs\Microsoft-Windows-DeviceManagement-Enterprise-Diagnostics-Provider%4Admin.evtx
Logs\Microsoft-Windows-Crypto-DPAPI%4BackUpKeySvc.evtx
Logs\Microsoft-Windows-Crypto-DPAPI%4Operational.evtx
Logs\Microsoft-Windows-DeviceSetupManager%4Admin.evtx
Logs\Microsoft-Windows-DeviceSetupManager%4Operational.evtx
Logs\Microsoft-Windows-ApplicationResourceManagementSystem%4Operational.evtx
Logs\Microsoft-Windows-Dhcp-Client%4Admin.evtx
Logs\Microsoft-Windows-Dhcpv6-Client%4Admin.evtx
Logs\Microsoft-Windows-Hyper-V-Guest-Drivers%4Admin.evtx
Logs\Microsoft-Windows-International%4Operational.evtx
Logs\Microsoft-Windows-AppReadiness%4Operational.evtx
Logs\Microsoft-Windows-Kernel-Boot%4Operational.evtx
Logs\Microsoft-Windows-Kernel-IO%4Operational.evtx
Logs\Microsoft-Windows-Kernel-EventTracing%4Admin.evtx
Logs\Microsoft-Windows-Kernel-Power%4Thermal-Operational.evtx
Logs\Microsoft-Windows-Kernel-ShimEngine%4Operational.evtx
Logs\Microsoft-Windows-Kernel-StoreMgr%4Operational.evtx
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Windows\System32\winevt\Logs\Microsoft-Windows-WPD-ClassInstaller%4Operational.evtx
Windows\System32\winevt\Logs\Microsoft-Windows-WPD-CompositeClassDriver%4Operational.evtx
Windows\System32\winevt\Logs\Microsoft-Windows-WPD-MTPClassDriver%4Operational.evtx
Windows\System32\winevt\Logs\SMSSApi.evtx

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APPENDIX E. 2002 VOTING SYSTEMS STANDARDS (VSS)

The 2002 VSS explicitly states:

"2.2.4.1 Common Standards

To ensure system integrity, all system shall:

...

g. Record and report the date and time of normal and abnormal events;

h. Maintain a permanent record of all original audit data that cannot be modified or overridden but may be augmented by designated authorized officials in order to adjust for errors or omissions (e.g. during the canvassing process.)

i. Detect and record every event, including the occurrence of an error condition that the system cannot overcome, and time-dependent or programmed events that occur without the intervention of the voter or a polling place operator; and

J. Include built-in measurement, self-test, and diagnostic software and hardware for detecting and reporting the system's status and degree of operability.

Furthermore, in 2.2.5.3, COTS (Commercial Off-The-Shelf) General Purpose Computer System Requirements, the 2002 VSS states:

Further requirements must be applied to COTS operating systems to ensure completeness and integrity of audit data for election software. These operating systems are capable of executing multiple application programs simultaneously. These systems include both servers and workstations (or "PCs"), including the many varieties of UNIX and Linux, and those offered by Microsoft and Apple. Election software running on these COTS systems is vulnerable to unintended effects from other user sessions, applications, and utilities, executing on the same platform at the same time as the election software.

"Simultaneous processes" of concern include unauthorized network connections, unplanned user logins, and unintended execution or termination of operating system processes. An unauthorized network connection or unplanned user login can host unintended processes and user actions, such as the termination of operating system audit, the termination of election software processes, or the deletion of election software audit and logging data. The execution of an operating system process could be a full system scan at a time when that process would adversely affect the election software processes. Operating system processes improperly terminated could be system audit or malicious code detection.

To counter these vulnerabilities, three operating system protections are required on all such systems on which election software is hosted.

First, authentication shall be configured on the local terminal (display screen and keyboard) and on all external connection devices ("network cards" and "ports"). This ensures that only authorized and identified users affect the system while election software is running.

Second, operating system audit shall be enabled for all session openings and closings, for all connection openings and closings, for all process executions and terminations, and for the alteration or deletion of any memory or file object. This ensures the accuracy and completeness of election data stored on the system. It also ensures the existence of an audit record of any person or process altering or deleting system data or election data.

Third, the system shall be configured to execute only intended and necessary processes during the execution of election software. The system shall also be configured to halt election software processes upon the termination of any critical system process (such as system audit) during the execution of election software.

And, in 4.3 Data and Document Retention, the 2002 VSS states:

All systems shall:

- a. Maintain the integrity of voting and audit data during an election, and for at least 22 months thereafter, a time sufficient in which to resolve most contested elections and support other activities related to the reconstruction and investigation of a contested election; and
- b. Protect against the failure of any data input or storage device at a location controlled by the jurisdiction or its contractors, and against any attempt at improper data entry or retrieval.

And the 2002 VSS states, in 4.4.3 In-Process Audit Records:

In-process audit records document system operations during diagnostic routines and the casting and tallying of ballots. At a minimum, the in-process audit records shall contain:

- a. Machine generated error and exception messages to demonstrate successful recovery. Examples include, but are not necessarily limited to:
 - 1) The source and disposition of system interrupts resulting in entry into exception handling routines;
 - 2) All messages generated by exception handlers;
 - 3) The identification code and number of occurrences for each hardware and software error or failure;
 - 4) Notification of system login or access errors, file access errors, and physical violations of security as they occur, and a summary record of these events after processing;
 - 5) Other exception events such as power failures, failure of critical hardware components, data transmission errors, or other type of operating anomaly;
- b. Critical system status messages other than informational messages displayed by the system during the course of normal operations. These items include, but are not limited to: Diagnostic and status messages upon startup;
 - 2) The "zero totals" check conducted before opening the polling place or counting a precinct centrally;
 - 3) For paper-based systems, the initiation or termination of card reader and communications equipment operation; and
 - 4) For DRE machines at controlled voting locations, the event (and time, if available) of activating and casting each ballot (i.e., each voter's transaction as an event). This data can be compared with the publiccounter for reconciliation purposes;
- c. Non-critical status messages that are generated by the machine's data quality monitor or by software and hardware condition monitors; and
- d. System generated log of all normal process activity and system events that require operator intervention, so that each operator access can be monitored and access sequence can be constructed.

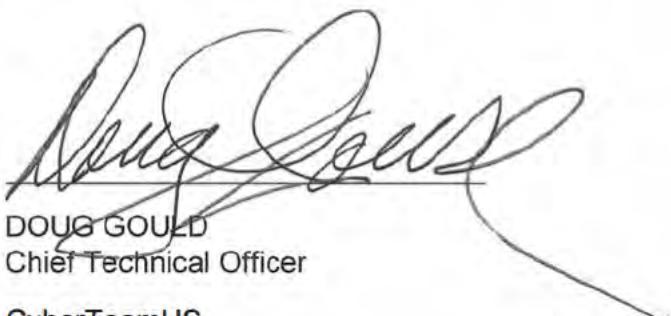
And section 6.5.5, Shared Operating Environment, in the the 2002 VSS states:

Ballot recording and vote counting can be performed in either a dedicated or nondedicated environment. If ballot recording and vote counting operations are performed in an environment that is shared with other data processing functions, both hardware and software features shall be present to protect the integrity of vote counting and of vote data. Systems that use a shared operating environment shall:

- a. Use security procedures and logging records to control access to system functions;
- b. Partition or compartmentalize voting system functions from other concurrent functions at least logically, and preferably physically as well;:
- c. Controlled system access by means of passwords, and restriction of account access to necessary functions only; and
- d. Have capabilities in place to control the flow of information, precluding data leakage through shared system resources.

The foregoing Forensic Examination and Report was prepared by me and I am responsible for its content.

This 15th day of September, 2021.



DOUG GOULD
Chief Technical Officer
CyberTeamUS

Doug Gould Biography

Doug Gould is an expert in Cyber Security with more than 40 years' experience in the field. Doug retired from AT&T after 31 years, where he served as Chief Cyber Security Strategist. He currently serves as Chief Technical Officer at CyberTeamUS.

DATE FILED: September 17, 2021 11:36 PM

FILED: ACFFCFC1192DB

CASE NUMBER: 2021CV30214



Doug began at AT&T with Bell Laboratories, serving in the Semiconductor Laser Development department and later in the Bell Lab's Security Group, as a delegate to the Bell Labs' Unix Systems

Subcommittee, was an early pioneer in the field of Computer Forensics and won a Bell Labs Innovation Award. At AT&T he designed the security architecture for one of the largest states in the US, consulted with cabinets of the nations' largest corporations and designed the first healthcare network fully compliant with Healthcare Information Exchange standards. Outside AT&T, he has overseen security for a US Government Agency and has solved major cases for the FBI and Secret Service; he has served as an Officer of the Court as a forensic expert and has been an expert witness in landmark cybersecurity cases. He designed security architectures for DoD networks including some of the most sensitive areas of the Government. Doug has owned and led several professional services firms in the Information Security field. He served on the NC Council for Entrepreneurial Development and has consulted with many companies about the complex integration of business and technology.

Doug is the past president of Eastern North Carolina InfraGard, the public-private partnership between the nation's critical infrastructure operators and the US Intelligence community.

Doug's background is at the Master's level in Electrical Engineering, Computer Science, Computer Security and Business Administration.

He is a subject matter expert in:

- Strategic Enterprise Security
- Security Architecture & Design (including network Micro-Segmentation)
- Security Governance
- Risk Management

- Security Device Technologies (Firewalls, IDS/IPS, DLP, SIEMs, Encryption, VPNs, Unified Threat Management, etc., Enterprise, Remote and Cloud)
- Information Forensics (Computer & Network Forensics)
- Public Key Infrastructures
- Identity and Access Management
- Authentication, Authorization and Access Control (incl Biometrics)
- Regulatory Compliance
- Physical Security (Threat Assessment/Risk Analysis, TSCM, Access Control, Counterterrorism & Counterintelligence, facility and site protection)
- Business Continuity & Disaster Recovery Planning
- Response & Recovery Strategy
- Threat Intelligence
- Intelligence Analysis

Doug served as Chief Information Security Officer at the World Institute for Security Enhancement, has written advanced security courses, developed advanced security methodologies and has taught government, private sector professionals and law enforcement agents information security, computer forensics, advanced computer forensic sciences and Technical Surveillance Countermeasures (TSCM).

Doug holds numerous certifications in security including the CISSP and Certified Anti-Terrorism Specialist (CAS), as well as numerous instructor certifications in security.

Doug currently serves as Chief Technical Officer at CyberTeamUS.

He is a Vietnam-era US Navy Veteran where he worked in Electronic Warfare and Electronic Intelligence.

Doug is an invited conference speaker.

EXHIBIT

G

Doug Gould Forensic Addendum

Major Forensic Cases

- 1986 – Disclosure of National Security Information
Discovered a leak of highly classified information and was able to identify the perpetrator within a group of 15 people. The FBI and US Naval Investigative Service brought this to resolution.
- Early 1990's – US Secret Service investigation, "Mothers of Doom" hacker case
At USSS Evidence Lab, in response to a request for assistance from USS SA Jack Lewis, performed evidence recovery and identified 800 pages of evidence, invalidating immunity of a suspect's testimony in a proffer session.
- Late 1990's – Interpath, a North Carolina Internet Service Provider (ISP)
This ISP was a tier-1 (top level) provider infected with Stacheldraht malware. Investigated the live (running) server and identified that all evidence on disc had been deleted. The only remaining evidence was a running program in memory, which was recovered. This case changed the Best Practice in Forensics – no longer is the first step necessarily removing the power. Had that been done no evidence would remain in this case.
- Late 1990's – As senior security administrator for the US EPA, investigated a complaint from the White House of computer intrusions and discovered an international attack involving 4 countries. Wrote monitoring and tracking software to capture the perpetrator online, brought together the FBI, Royal Canadian Mounted Police (RCMP), Scotland Yard and Deutsche Bundespost in a live investigation tracking the intruder resulting in an arrest in Germany.
- South Carolina – A Public Works supervisor accused of violation of county policy was fired and brought countersuit. Forensic investigation recovered 4 3" thick binders of evidence showing sexual misconduct. Countersuit dismissed.
- Discovered Al Qaida attack plans targeting US Soil. Working with the FBI, the perpetrator, who was a foreign citizen in the US. Arrest made within 48 hours and the attack was thwarted.
- Mid-2000's – Florida vs. Rabinowicz – in a case where possession of contraband was the only element of proof, stipulated that the contraband was authentic and present. I proved forensically that the defendant was not technically in possession of the evidence and that evidence was planted. Qualified as an expert witness and provided expert testimony in this case.
- Mid-2000's – Identified a leak of national security from Oak Ridge National Laboratory involving chemical weapon information using forensic analysis and was able to identify the perpetrator. DSS responded and resolved the case.
- Mid-2000's – Investigated sabotage of a health industry contractor. The systems administrator had been fired and sabotaged the system. Solved the case and the administrator went to prison.

Instructor of Forensics

- Taught Forensics and Advance Forensic Techniques to State Law Enforcement, Military and major corporate customers at the World Institute for Security Enhancement.
- Taught Technical Surveillance Countermeasures (TSCM) course for government and industry at the World Institute for Security Enhancement.
- Wrote the entire course and taught the entire CISSP curriculum at Able Information Systems.

COLORADO SECRETARY OF STATE

[8 CCR 1505-1]
 DATE FILED: November 19, 2021 10:14 PM
 FILING ID: A3D9A19A24908
 CASE NUMBER: 2021CV33691

ELECTION RULES

Rules as Adopted - Redline

June 17, 2021

(Additions to the current rules are reflected in SMALL CAPS and deletions from current rules are shown in ~~stricken~~ type. *Publication instructions/notes* may be included):

Current 8 CCR 1505-1 is amended as follows:

Amendments to Rule 20.5.4 including New Rules 20.5.4(a) and 20.5.4(e):

20.5.4 ~~Non-county employee access~~—VOTING SYSTEM ACCESS SECURITY

- (A) EXCEPT FOR VOTERS USING A VOTING SYSTEM COMPONENT TO VOTE DURING AN ELECTION, COUNTY CLERKS MAY NOT ALLOW ANY PERSON TO ACCESS ANY COMPONENT OF A COUNTY'S VOTING SYSTEM UNLESS THAT PERSON HAS PASSED THE BACKGROUND CHECK REQUIRED BY THIS OR ANY OTHER RULE OR LAW, IS PERFORMING A TASK PERMITTED BY THE COUNTY CLERK OR THE OFFICE OF THE SECRETARY OF STATE UNDER STATUTE OR RULE, AND IS:
 - (1) AN EMPLOYEE OF THE COUNTY CLERK;
 - (2) APPOINTED AS AN ELECTION JUDGE BY THE COUNTY CLERK IN ACCORDANCE WITH ARTICLE 6 OF TITLE 1, C.R.S.;
 - (3) AN EMPLOYEE OF THE VOTING SYSTEM PROVIDER FOR THE COUNTY'S VOTING SYSTEM; OR
 - (4) AN EMPLOYEE OR DESIGNEE OF THE SECRETARY OF STATE.
- (a)(b) All ~~vendors~~ VOTING SYSTEM PROVIDER EMPLOYEES who conduct work on any component of a county's voting system must ~~conduct~~ COMPLETE a criminal background check ~~on each employee~~ prior to the employee's work with the voting system. The ~~vendor~~ PROVIDER must affirm that the check was conducted in writing to the Secretary of State prior to the employee conducting any work. Any person convicted of an election offense or an offense with an element of fraud is prohibited from working on any component of a county's voting system.
- (b)-(c) All Secretary of State staff who conduct work on any component of a county's voting system must undergo a criminal background check prior to the staff's work with the voting system.
- (D) Any person convicted of an election offense or an offense with an element of fraud is prohibited from working on any component of a county's voting system.

(E) ANY VIOLATION OF RULE 20 MAY RESULT IN THE PROHIBITION OR LIMITATION ON THE USE OF, AS WELL AS DECERTIFICATION OF, A COUNTY'S VOTING SYSTEM OR COMPONENTS IN ACCORDANCE WITH SECTION 1-5-621, C.R.S., AND RULE 21.7.3.

Amendments to Rule 21.7.3. Specifically, a portion of former Rule 21.7.3 is re-codified as New Rule 21.7.3(a). Additionally, the Secretary adopts New Rules 21.7.3(b-e) and 21.7.4.

21.7.3 ~~If any voting system provider, provides for use, installs, or causes to be installed an uncertified and decertified voting system or component, the Secretary of State may suspend use of the component or the voting system. THE SECRETARY OF STATE MAY INVESTIGATE A COMPLAINT FILED BY ANY PERSON, AND, UPON ANY FINDINGS AS OUTLINED IN (A) THROUGH (E) BELOW, MAY PROHIBIT, LIMIT OR DECERTIFY USE OF A VOTING SYSTEM, IN WHOLE OR IN PART. AN INVESTIGATION BY THE OFFICE OF THE SECRETARY OF STATE MAY INCLUDE, BUT IS NOT LIMITED TO, THE REVIEW OR INSPECTION OF THE VOTING SYSTEM COMPONENT AT ISSUE.~~

(A) ANY PERSON INSTALLED ANY UNCERTIFIED OR DECERTIFIED VOTING SYSTEM COMPONENT;

(B) A COUNTY BREAKS THE CHAIN-OF-CUSTODY FOR ANY COMPONENT OF A VOTING SYSTEM BY ALLOWING ANY INDIVIDUAL NOT AUTHORIZED BY RULE 20.5.4 ACCESS TO THAT COMPONENT;

(C) A COUNTY SUBMITS AN INCIDENT REPORT REGARDING A COMPONENT OF A VOTING SYSTEM AND THE SECRETARY OF STATE FINDS THAT THE CHAIN-OF-CUSTODY CANNOT BE REESTABLISHED SECURELY;

(D) A COMPONENT OF A VOTING SYSTEM EXPERIENCES REPEATED HARDWARE FAILURES OR MALFUNCTIONS OF A SIMILAR NATURE; OR

(E) THE SECRETARY DETERMINES THAT THE INTEGRITY OR SECURITY OF A VOTING SYSTEM COMPONENT CANNOT BE VERIFIED AND THAT CHAIN-OF-CUSTODY CANNOT BE REESTABLISHED SECURELY.

21.7.4 THE SECRETARY OF STATE WILL NOTIFY A COUNTY OF THE PROHIBITION OR LIMITATION ON USE OR DECERTIFICATION OF A COMPONENT OF A VOTING SYSTEM UNDER RULE 21.7.3 AND THE COUNTY MUST IMMEDIATELY CEASE USING THAT COMPONENT.

[Not shown: current Rule 21.7.4 is renumbered as Rule 21.7.5]

Tweet

See new Tweets

Conversation



DATE FILED: November 19, 2021 10:14 PM

FILING ID: A3D9A19A24908

CASE NUMBER: 2021CV33691

Jena Griswold

@JenaGriswold

My office just issued rules prohibiting sham election audits in the State of Colorado. We will not risk the state's election security nor perpetuate The Big Lie. Fraudits have no place in Colorado. sos.state.co.us/pubs/newsRoom/

The Value of a Trusted Crowd of Ethical Hackers for Election Security

DATE FILED: November 19, 2021 10:14 PM
 FILING ID: A3D9A19A24908
 CASE NUMBER: 2021-CV-3691

A closer look at the critical role that managed crowdsourced security testing can play in securing the technologies that underpin American democracy

In the summer of 2020, soon after red team researchers from a managed network of ethical hackers [began examining the State of Colorado's voter registration website](#) for potential vulnerabilities, they spotted something alarming. Problems with the website's CAPTCHA challenge, a common first line of defense online, could have opened up the site to a distributed denial of service (DDOS) attack or created a gateway for further malicious activity during an already challenging year for election officials nationwide.

"They found bugs in how we implemented CAPTCHA that no other testers had ever discovered," said Trevor Timmons, CIO for the Secretary of State of Colorado. The state had previously worked with traditional pen testing firms to evaluate online election systems and related websites. "That was jarring to say the least, but we wouldn't have found it if we didn't have the best ethical hackers working with us to ensure we've done everything possible—and haven't overlooked any part of our system—to keep the election process safe and secure."

The state worked with the red team network through a pro-bono [Secure the Election Initiative](#) designed so states could take advantage of a managed network of ethical hackers and gain critical security insights ahead of the election. Researchers who approach security with an adversarial mindset have become incredibly powerful resources for Global 2000 corporations, the Department of Defense, international financial institutions and the biggest healthcare organizations.

In total, the red team network discovered seven vulnerabilities in Colorado's election-related systems as well as the Secretary of State's official website. Colorado patched all of them well ahead of Election Day using the detailed reports they received in real time from the provider's Crowdsourced Security Platform.

Crowdsourced security testing provides a rigorous, adversarial perspective on the security of assets. It differs from Vulnerability Disclosure Programs (VDP) in the level of testing quality and controls that it provides. A managed crowdsourced testing platform will recruit the top security researchers, vet them based on their technical abilities and background, and incentivize them to find vulnerabilities in systems using their offensive skill sets. The adversarial testing activity is carried out through a smart platform designed to accelerate the time it takes researchers to find flaws, all while providing customers with control, visibility, and advanced analytics.

On the other hand, VDPs offer a "see something, say something" approach by allowing anyone on the internet to report a vulnerability. Still, VDP is a critical ingredient of a robust security testing strategy for providing a mechanism through which people can report potential security issues and for getting additional eyes on a digital asset. However, if not managed carefully, a VDP can also burden an organization if they are not prepared. Reports submitted through VDPs are often false positives and numerous, requiring a lot of time to sift through and find any valid vulnerabilities.

Figure 1: Differences in Crowdsourced Security Models

	Vulnerability Disclosure Program	Crowdsourced Security Testing Platform Used by Colorado
People	<ul style="list-style-type: none"> Open to anyone on the internet 	<ul style="list-style-type: none"> Vetted crowd, monitored through the platform
Process	<ul style="list-style-type: none"> Submit a report through a portal 	<ul style="list-style-type: none"> Incentive-driven testing and compliance User has power to stop/start testing Legal protection
Technology	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Smart scanning technology enables researchers and accelerates findings
Results	<ul style="list-style-type: none"> High volume of submissions with varying quality 	<ul style="list-style-type: none"> High-quality, triaged vulnerability and assessment reports Real-time analytics for rapid response

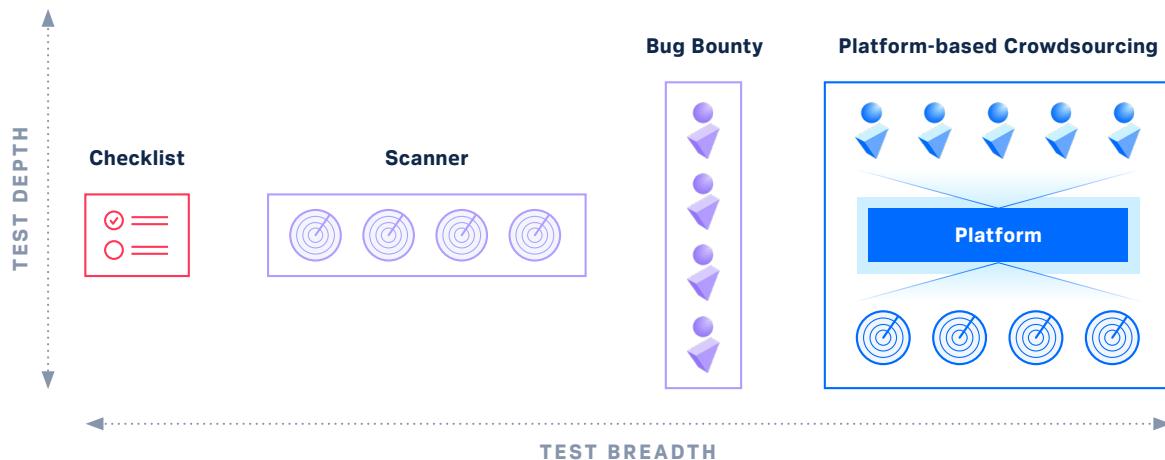
Before starting a VDP, states should consider:

- Are resources available to triage all submissions and remediate valid vulnerabilities? Triage and remediation resources are critical for prioritizing key issues.
- Are integrations with development and automation tools available to help save time and stay on track?
- Their willingness to include all internet-connected assets in the VDP to maximize coverage.

For anyone looking to start a crowdsourced security program, Dr. Mark Kuhr, a former U.S. National Security Agency technical director and CTO of a leading crowdsourced security platform, recommends starting with a managed crowdsourced penetration test. “Starting with a controlled, targeted test by a select group of security researchers that we know are highly skilled and highly trustworthy can help identify and patch the critical vulnerabilities before the public sees them,” Kuhr explains. “Once an attack surface has been hardened through crowdsourced

penetration testing, we then recommend layering in a vulnerability disclosure program and continuous testing and scanning through the platform.”

Crowdsourced security testing has been recommended by the [DoD](#), the [White House](#), and [the U.S. Senate](#) as a best practice. Traditional penetration testing can fall short in modern digital environments. The static testing team, point-in-time testing cadence, and checklist-driven approach cannot scale to the magnitude of today’s pervasive and persistent threat.

Figure 2: Differences in Security Testing Models

Voting equipment vendors have also adopted crowdsourced testing to test election-related hardware. In August 2020, [during the Black Hat USA cybersecurity conference](#), one of the largest U.S. election vendors announced a partnership with the same crowdsourced platform with which Colorado partnered to test its newest electronic poll book. That development was hailed as a breakthrough in the relationship between election vendors and independent election security researchers. At the time, [Wired Magazine wrote](#) that the collaboration showed the beginning of a new partnership between security researchers and election vendors.

The crowdsourced security testing platform allowed the election equipment vendor to utilize top security researchers through a managed and private engagement. The research also helped the vendor prioritize any vulnerabilities the red team discovered through rigorous testing. The election equipment provider chose not to publicly reveal vulnerabilities discovered during testing. The process allowed them to “learn about and fix potential security issues before malicious hackers find them,” wrote Wired, which also noted “the

company plans to run additional crowdsourced penetration tests with [the crowdsourced security platform] on other products as well.”

The recent SolarWinds Orion hack calls for a more adversarial mindset when it comes to security testing. In that assault on thousands of organizations, nation-state hackers were not only able to enter victims’ systems through a software update, they successfully expanded across networks to access incredibly sensitive government and industry data. Testing such as the kind performed by a crowdsourced security platform can help harden internal assets against these types of “lateral movement” attacks.

“The crowd needs to be a critical part of any good cybersecurity strategy,” said Kuhr. “An adversarial model of crowdsourced penetration testing is about as close as an organization can get to testing systems against a real adversary. This approach is designed to harness the collective brainpower of the world’s best ethical hackers when it comes to finding and fixing the most critical vulnerabilities and other weaknesses that can leave organizations dangerously vulnerable.”

About the Author

Synack, the most trusted crowdsourced security testing platform, delivers smarter penetration testing to security teams. The platform provides continuous testing and actionable results to today’s organizations that need a scalable, efficient way to test their attack surfaces. Synack’s crowdsourced penetration testing is powered by the world’s most skilled and trusted ethical hackers and augmented by AI-enabled technology to give customers the best of human intelligence and machine intelligence. Headquartered in Silicon Valley with regional offices around the world, Synack protects leading global banks, federal agencies, DoD classified assets, and more than \$1 trillion in Global 2000 revenue. A 4-time CNBC Disruptor 50 company, Synack was founded in 2013 by former NSA security experts Jay Kaplan, CEO, and Dr. Mark Kuhr, CTO.

For more information, please visit www.synack.com.

CORA REQUEST DATED July 7, 2021

To: CORA Custodian
1700 Broadway, Suite 200
Denver, CO 80290

DATE FILED: November 19, 2021 10:14 PM
FILING ID: A3D9A19A24908
CASE NUMBER: 2021CV33691

Sent via email to CORA@sos.state.co.us

Send to: maureenwestlaw@protonmail.com

Phone: 720.270.0488

Per 24-72-203(3), C.R.S., it is expected that this CORA request will be responded to within (3) working days of receipt of this request.

I request that you make available for inspection and copying the following public records. The information can also be emailed to: maureenwestlaw@protonmail.com

CORA Request No. 1: Documents related to the June 17, 2021 Emergency Rules 20.5.4(b); Rule 20.5.4(c) and (d) and Rule 21. 7.5 regarding:

1. public concern about purported “forensic audits”;
2. public support for “forensic audits”;
3. audits conducted by unknown and unverified third parties in Colorado;
4. audits conducted by unknown and unverified third parties nationwide;
5. audits conducted by unknown parties in Colorado;
6. audits conducted by unverified parties in Colorado; and
7. rapid increase of purported “forensic audits.”

This CORA Request No. 1 is for all records and communications (both written and verbal) which shall include but not be limited to written email communications, letters, text messages, phone communications and/or records of such communications of Secretary of State Jena Griswold, (“SOS”), SOS Election Security Team members, SOS Election Division employees, Judd Choate and/or Judd Choate’s staff, Trevor Timmons and/or Trevor Timmons’ staff, major political parties, voting system providers and Colorado citizen(s). This record request is for the time period between April 1, 2021 and date of submission (July 7, 2021).

CORA Request No. 2: Documents related to the June 17, 2021 Emergency Rules 20.5.4(b); Rule 20.5.4(c) and (d) and Rule 21. 7.5 regarding:

1. security of Colorado’s voting systems;
2. integrity of Colorado’s voting systems;

3. public confidence in Colorado voting systems;
4. security of Colorado elections;
5. integrity of Colorado elections; and
6. public confidence in Colorado elections.

This CORA Request No. 2 is for all records and communications (both written and verbal) which shall include but not be limited to written email communications, letters, text messages, phone communications and/or records of such communications of Secretary of State Jena Griswold, ("SOS"), SOS Election Security Team members, SOS Election Division employees, Judd Choate and/or Judd Choate's staff, Trevor Timmons and/or Trevor Timmons' staff, major political parties, voting system providers, and Colorado citizen(s). This record request is for the time period between April 1, 2021 and date of submission (July 7, 2021).

CORA Request No. 3: Documents related to the June 17, 2021 Emergency Rules 20.5.4(b); Rule 20.5.4(c) and (d) and Rule 21. 7.5 regarding:

1. uniform conduct of election.

This CORA Request No. 3 is for all records and communications (both written and verbal) which shall include but not be limited to written email communications, letters, text messages, phone communications and/or records of such communications of Secretary of State Jena Griswold, ("SOS"), SOS Election Security Team members, SOS Election Division employees, Judd Choate and/or Judd Choate's staff, Trevor Timmons and/or Trevor Timmons' staff, major political parties, voting system providers and Colorado citizen(s). This record request is for the time period between April 1, 2021 and date of submission (July 7, 2021).