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Test Plan for EAC 2005 VVSG Certification Testing
Clear Ballot Group ClearVote 2.2 Voting System

EAC Project Number: CBG-CV-22

Version: 00

Date: 03/29/2021

EAC Lab Code 1501

NVLAP LAB CODE 200908-0

SIGNATURES

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REVISIONS

Revision	Description	Date
00	Initial Release	03/29/2021

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1.0 INTRODUCTION

The purpose of this Test Plan is to document the procedures that Pro V&V, Inc. will follow to perform certification testing during a system modification campaign for the Clear Ballot Group (CBG) ClearVote 2.2 Voting System to the requirements set forth for voting systems in the U.S. Election Assistance Commission (EAC) 2005 Voluntary Voting System Guidelines (VVSG), Version 1.0. Prior to submitting the voting system for testing, CBG submitted an application package to the EAC for certification of the ClearVote 2.2 Voting System. The application was accepted by the EAC and the project was assigned the unique Project Number of CBG-CV-22.

At test conclusion, the results of all testing performed as part of this test campaign will be submitted to the EAC in the form of a national certification test report.

1.1 Description and Overview of EAC System Being Modified

The EAC Certified System that is the baseline for the submitted modification is described in the following subsections. All information presented was derived from the previous Certification Test Report, the EAC Certificate of Conformance and/or the System Overview.

The baseline system for this modification is the ClearVote 2.0 System. Detailed descriptions of the ClearVote 2.0 test campaign are contained in Pro V&V Report No. TR-CBG-004-01.03, which is available for viewing on the EAC's website at www.eac.gov.

The ClearVote 2.0 Voting System is a paper-based optical scan voting system consisting of the following major components: ClearDesign (ballot design and EMS), ClearCount (central count, tabulation, and election reporting), ClearCast (precinct count and tabulation), and ClearAccess (accessible voting and ballot marking device).

The following sections contain a product description and an overview of the design methodology of the ClearVote 2.0 Voting System, as taken from the Clear Ballot Group technical documentation.

ClearDesign

ClearDesign is an Election Management System consisting of an interactive set of applications which are responsible for all pre-voting activities necessary for defining and managing elections. This includes ballot design, ballot proofing, ballot layout, and ballot production. The ClearDesign system consists of the physical components listed below. All of the components and generation of voting machine election definition file packages are unmodified COTS that are connected via a wired, closed, and isolated network not connected to any other systems or the Internet.

- DesignServer: A laptop or desktop computer running Ubuntu with the ClearDesign software and hosting the election database.
- DesignStation(s): One or more laptops or desktops running Windows used to connect to the DesignServer. A browser is used to perform the necessary tasks. A user with administration privileges will be able to define users and manage the elections.
- Network Switch: Used to connect the DesignStations to the DesignServer using a wired, closed Ethernet-based network.

ClearCount

ClearCount is a central, high-speed, optical scan ballot tabulator coupled with ballot processing applications. The ClearCount software runs on unmodified COTS laptop or desktop computers running the Windows operating system and supports specific models of scanners. The ClearCount central-count system running on an Ubuntu Linux operating system, with Ethernet connections to workstations running the Windows operating system consists of the physical components listed below. All of the components are unmodified COTS that are connected via a wired, closed, and isolated network not connected to any other systems or the Internet.

- CountServer (formerly known as ScanServer): A laptop or desktop computer running the ClearCount software and hosting its election database and the web server that serves its election reports.
- ScanStation(s): One or more laptop or desktop/scanner pairs used to scan and tabulate ballots.
- Network Switch: Used to connect the ScanStations to the CountServer using a wired, closed Ethernet.
- CountStation (formerly known as Election Administration Station): One or more Windows laptop or desktop computers installed with browser software, linked by a wired Ethernet connection to the CountServer using the network switch. This station can serve multiple uses: user administration, election administration, adjudication, and reporting. This station is also used to consolidate the vote totals and ballot images from the ClearCast precinct tabulator. The vote totals and ballot images are consolidated by the ClearCount Software via the ClearCast USB drive.

All files that make up the ClearCount software reside on a single CountServer that is shared by all client ScanStations. The Tabulator software is executed by the ScanStations at run-time from files that reside on the CountServer. The only software programs that have to be installed on ScanStations, apart from the Windows operating system, are the Fujitsu PaperStream Capture (formerly known as ScandAll Pro) software and drivers required by the scanner hardware. The ClearCount software consists of the following components:

- Tabulator: The Tabulator application handles ballot tabulation. The Tabulator software is stored on the CountServer and an instance of Tabulator runs on each ScanStation. The Tabulator counts the ballots and adjudicates the vote for the ballots scanned on that ScanStation. Upon completion of a batch of ballots, the Tabulator application sends its results and the associated card images to the central election database on the CountServer
- Election Database: A centralized election database that resides on the CountServer and collects the output of each Tabulator.
- Election Reports: A suite of reports that provides election results and analysis and allows election officials to review individual ballot images.
- Card Resolutions tool: A web application that allows election officials to review and appropriately resolve unreadable voted ballots. It also allows manual adjudication of automatically adjudicated ballots where officials determine changes need to be made to reflect voter intent.
- User and Election Database Management through web applications: On the User Administration dashboard, the administrator can add, rename, or delete users, assign permissions, and change user passwords.

On the Election Administration dashboard, the administrator can create or delete an election, set an election as active, merge ClearCast election results, and backup or restore an election.

ClearCast

The ClearCast tabulator is a precinct count ballot scanning solution suitable for early and election in-person voting, including processing ballots printed by the ClearAccess accessible ballot marking device. The ClearCast application runs on the precinct count-based tabulator, and is used to scan, count and tally marked ballots. Its functionality is divided into three essential modes, Election Mode (Early Voting and/or Election Day), which is used to process voter cast ballots, Pre-Election Mode, this occurs prior to Election Mode, and is used to test all system functionality prior to the start of the election, and Post-Election Mode, which is used to perform administrative functions following the close of the election.

ClearAccess

ClearAccess is an accessible touchscreen ballot marking device (BMD) used for the creation of paper ballots that can be scanned and tabulated by ClearCast or ClearCount. The ClearAccess components of the ClearVote voting system consist of computers combined with personal assistive devices, printers, and uninterruptible power supplies to form a ballot-marking device.

1.1.1 Baseline Certified System

The tables below detail the certified ClearVote 2.0 equipment and firmware versions.

Table 1-1. ClearVote 2.0 Voting System Software

Firmware/Software	Version
ClearDesign Components, Version 2.0.1	
Windows	10 Pro 1607
Google Chrome	55.0.2883.87
Ubuntu	18.04.1 LTS
MySQL	5.7.26
Apache	2.4.18
libapache2-mod-fcgid	2.3.9
PhantomJS	1.9.8
Unzip	6.0.21
Samba	4.7.6
Python PIP	9.0.1
Zip	3.0.11
Pyinstaller	3.2.1
Python JSMIN	2.2.1
Python	2.7.15
Python webpy	0.38
Python MySQL DB	1.3.10

Table 1-1. ClearVote 2.0 Voting System Software *(continued)*

Firmware/Software	Version
SQLAlchemy	1.0.15
Python Pillow	5.1.0
Python Flup	1.0.2
Python DBUtils	1.1
Python XLRD	0.9.4
Python FontTools library	3.0
Python RTF	0.2.1
OpenSSL (FIPS)	2.0.10
OpenSSL	1.0.2g
DataTable	1.10.16
DataTable-Buttons	1.4.2
DataTable-Buttons-JSZip	2.5.0
DataTable-Buttons-Pdfmake	0.1.32
DataTablePlugins	1.10.16
bootstrap	3.0.0
jquery	1.10.2
jquery-impromptu	5.2.3
jquery-qrcode	1.0
jquery-splitter	0.14.0
jquery-ui	1.10.4
jscolor	1.4.2
tinymce	4.1.9
libmp3lame	0.5.0
jszip	3.1.2
papaparse	4.1.2
jsmin	12/4/2003
ClearAccess Components, Version 2.0.1	
Windows	10 Pro 1607
Google Chrome	61.0.3163.100
nsis	3.01
PyInstaller	3.2
Python	2.7.10
webpy	0.38
Python-future	0.15.2
pefile	2018.8.8
pywin	223
jquery	1.10.2

Table 1-1. ClearVote 2.0 Voting System Software *(continued)*

Firmware/Software	Version
DataTables	1.10.16
jsmin	2003-12-04
Zebra scanner driver	3.04.0007
ClearCast Components, Version 2.0.0	
scanner_control	0.0.33
Ubuntu	18.04.1 LTS
google_chrome	76.0.3809.87-1
zeromq	4.2.3
pyinstaller	3.2.1
openssl-fips	2.0.10
openssl	1.0.2g
libScanAPI.a	1.1.4
DataTables	1.10.16
JTSage DateBox	4.0.0
jQuery.NumPad	1.4
jQuery	1.12.4
jquery.ui	1.11.3
ClearCount Components, Version 2.0.1	
Windows	10 Pro 1607
Google Chrome	55.0.2883.87
Ubuntu	18.04.1 LTS
Apache	2.4.29
libapache2-mod-fcgid	2.3.9
Python(part of Ubuntu)	2.7.15
MySQLdb (part of Ubuntu)	5.7.26
PyInstaller	3.2.1
PollyReports	1.7.6
OpenSSL	1.1.0g
OpenSSL FIPS Object Module	2.0.10
JavaScript Bootstrap library	2.3.2
JavaScript Chosen library	1.0.0
JavaScript jQuery library	1.10.2
J JavaScript jQuery-migrate library	1.2.1
JavaScript DataTables library	1.9.4
ColVis	1.0.8
JavaScript TableTools library	2.1.5
ZeroClipboard	1.0.4-TableTools2

Table 1-1. ClearVote 2.0 Voting System Software *(continued)*

Firmware/Software	Version
JavaScript FixedHeader library	2.0.6
JavaScript hotkeys library	0.8
JavaScript tooltip library	1.3
JavaScript pep library	1.0
JavaScript LESS library	1.3.3
Fujitsu fi-6400	PaperStream 1.30.0
Fujitsu fi-6800	10.10.710
Fujitsu fi-7180	PaperStream 1.4.0
Aptitude	1.6.11
auditd	2.8.2
debconf	1.5.66
pmount	0.9.23
Samba	4.7.6
udisks	2.7.6

Table 1-2. ClearVote 2.0 Voting System Equipment

Component	Model	Serial Number
ClearDesign Components		
Dell Latitude Laptop (client)	5580, 5590	CF3L3G2, B5TD1N2
Dell OptiPlex (client)	7440	JXDFHH2
Dell Precision Tower (client)	T3620	GSKRMV2 & GSKSMN2
Dell PowerEdge Server (server)	T130, T140, T440, T630	5G0YLN2, 8BFH3W2, H6JZLN2, GCHLHL2
Dell 24 inch Monitor	SE2416H	FVWV5G2
Dell 22 inch Monitors	E2216HV	36765D2 & 90665D2
Cisco 8-Port Switch	SG250-08	PSZ21451MLJ
LG DVD Burner	GP65NB60	LG-DVD-001
Anker 10 port USB 3.0 Hub	AK-68ANHUB-B10A	22XGHFWC, 22XGHGKX
SySTOR Multiple USB Duplicator	SYS-USBD-11	ES-27095
Corsair Flash Padlock 3 32 GB	Secure USB 3.0 Flash Drive	CMFPLA3B-32GB
SanDisk Extreme Go 64 GB USB	3.1 USB Drive	SDCZ800-064G-G46
SanDisk Ultra Flair 32 GB USB	3.0 Drive	SDCZ73-032G-A46, SDCZ73-032G-G46

Table 1-2. ClearVote 2.0 Voting System Equipment *(continued)*

ClearAccess Components		
Component	**Model**	**Serial Number**
ELO 15 inch AIO	E-Series (ESY15E2)	L17C014810 & A18C004080
Dell OptiPlex AIO	5250	HCGMGK2
Oki Data Laser Printer	B432dn	AK5B007647A0 & AK91021454C0
ELO 20 inch AIO	X-Series (ESY20X2)	D18Q000334, D18Q000335, B18Q001601, B18Q001599 & B18Q000597
Oki Data Laser Printer	B432dn-B	AK8C017016C0, AK8C017022C0
Dell Inspiron 15”	7000 Series	80S1YD2
Brother Laser Printer	HL-L2340DW	U63879M4N62861
Brother Laser Printer	HL-L2350DW	U6496A8N238333
Micrologic Tray Kit	B432TrayKit	CBG-MTK-001
Zebra Technologies Bar Code Scanner	DS457-SR, CBL-58926-05	18059000501984, 18059000501981, 18095000500487, 18095000500491
Storm EZ Access Keypad	EZ08-222013	15000005, 15000007, 15020478
Origin Instruments Sip/Puff Breeze with Headset	AC-0313-MUV	CBG-SP-001, 002, 003
Samson Over-Ear Stereo Headphones	SASR350	SR350J8G390 & SR350J8G396
Clear Ballot Privacy Screen	CB-1097-1.5	CBG-PVS-001
Ergotron Neo-Flex	Widescreen Lift Stand	33-329-085
Corsair Flash Padlock 3 32 GB	Secure USB 3.0 Flash Drive	CMFPLA3B-32GB
SanDisk Extreme Go 64 GB USB	3.1 USB Drive	SDCZ800-064G-G46
SanDisk Ultra Flair 32 GB USB	3.0 Drive	SDCZ73-032G-A46, SDCZ73-032G-G46
Wurth	742-711-32, 742-712-22, 742-717-22	FRT021 through FRT025
Polymide Film Tape	1" 2 mil	CV-1210-2.0
Polymide Film Tape	2" 2 mil	CV-1211-2.0
Polymide Film Tape	4" 2 mil	CV-1212-2.0
APC Smart-UPS	SMT2200C	AS1809160852
Lifetime 4-Foot Folding Table	4428	FT-001
LG DVD Burner	GP65NB60	LG-DVD-002

Table 1-2. ClearVote 2.0 Voting System Equipment *(continued)*

Component	Model	Serial Number
ClearAccess Components		
CyberPower Smart App UPS	PR1500RT2U	PY3HZ2002933, PY3HZ2003000
ClearCount Components		
Dell Latitude Laptops (ScanStation)	5580, 5590	2F3L3G2, 9W5D1N2
Dell Precision Tower (Election Administration)	T3620	GSKQMN2
Dell Latitude Laptops (Election Administration)	5580, 5590	C9S22G2, 5M5D1N2
Dell PowerEdge Server (CountServer)	T130, T140, T330, T440	5G0ZLN2, 8BFJ3W2, FHV9RD2, H6J5MN2
Dell OptiPlex (Election Administration)	7440	JXDFHH2
Fujitsu Scanner	fi-7180	A20DC10302 & A20D000798
Fujitsu Scanner	fi-6800	A9HCA00737 & A9HCC00543
Fujitsu Scanner	fi-6400	AKHCC00362 & AKHCC00609
LG DVD Burner	GP65NB60	LG-DVD-003
Western Digital 4 TB External HD	WDBFJK0040HBK-NESN	WCC7K7YF11ZD
Western Digital 8 TB External HD	WDBFJK0080HBK-NESN	75H4PXJD
Netac Keypad Encryption Portable Hard Disk	K390	R4JT22619T
Dell 24 inch Monitor	P2415Q	3TZSJ92
Dell 22 inch Monitor	P2217	7818672
Cisco 8-Port Switch	SG250-08	PSZ21451MYX
Cisco 26-Port Switch	SG250-26	DNI203400A6 & DNI203400AW
Corsair Flash Padlock 3 32 GB	Secure USB 3.0 Flash Drive	CMFPLA3B-32GB
SanDisk Extreme Go 64 GB USB	3.1 USB Drive	SDCZ800-064G-G46
SanDisk Ultra Flair 32 GB USB	3.0 Drive	SDCZ73-032G-A46, SDCZ73-032G-G46
Anker USB Hub	AK-68ANHUB-B10A)	22XGHFWC, 22XGHGKX
APC Smart-UPS	SMT-1500C	3S1831X12280
WorkEZ Executive Scanning Shelf	WEEs (661799222990)	CBG-EZ-001, 002,003, & 004
StarTech 4-Port VGA KVM Switch w/Hub	SV431USB	G73011TG80247

Table 1-2. ClearVote 2.0 Voting System Equipment *(continued)*

Component	Model	Serial Number
ClearCast Components		
ClearCast	Model D Revision 5	041902446, 041902447, 041902453
Corsair Flash Padlock 3 32 GB	Secure USB 3.0 Flash Drive	CMFPLA3B-32GB
SanDisk Extreme Go 64 GB USB	3.1 USB Drive	SDCZ800-064G-G46
SanDisk Ultra Flair 32 GB USB	3.0 Drive	SDCZ73-032G-A46, SDCZ73-032G-G46
Ballot Bag	CV-1032-1.5, CV-113-1.5	bag001, bag002
Ballot Box	CV-1082-2.0	box001
Wurth Ferrites	74271142,74275812 74275813,74271132 ,74271722	FRT001 through FRT020

1.1.2 Description of Modification

ClearVote 2.2 is a modified voting system configuration that includes upgrades to the ClearCast, ClearAccess, ClearCount, and ClearDesign components of the ClearVote 2.0 system. Detailed information on how the modifications will be addressed is included in Section 1.1.5. *Note: For a more detailed listing of the changes, please refer to Attachment B of this Test Plan and/or the ClearVote 2.2 Change Notes, Clear Ballot Part Number: 100128-10018.*

The submitted modifications include the following summarized changes from version 2.0 to 2.2:

ClearDesign

- Enhancements:
- Code-maintenance upgrades
- Fixed Defects:

ClearAccess

- Enhancements:
- Fixed defects

ClearCount

- Enhancements:

- Fixed defects

ClearCast

- Enhancements:
- Fixed defects

1.1.3 Initial Assessment

An initial assessment on the submitted modifications was performed to determine the scope of testing. Testing from the previous test campaign was used to establish the baseline. Based on the assessment, it was determined the following tasks would be required to verify compliance of the modifications:

- Source Code Review, Compliance Build, Trusted Build, and Build Document Review
- System Level Testing
  - System Integration
  - Accuracy
  - Volume and Stress
- Technical Documentation Package (TDP) Review
- Functional Configuration Audit (FCA)
- Hardware Testing
- Usability and Accessibility Testing
- Security Testing

1.1.4 Regression Test

Regression testing for this test campaign will consist of the execution of the System Integration and Accuracy Tests.

1.1.5 System Modification Evaluation

The submitted modifications to the ClearVote 2.0 System consist primarily of software changes to accommodate defect resolutions, enhancements, and improved security and user interface features. Hardware modifications to ClearCast and ClearAccess are also submitted for this evaluation. To verify the modifications are successfully addressed throughout the test campaign, each modification will be tracked and verified during the execution of the relevant test area.

For example, source code changes will be verified during the source code review. Modifications requiring functional test verification will be evaluated by executing the standard Accuracy Test, the System Integration Test, or during performance of the FCA. Modifications that are not adequately evaluated during the performance of these tests will be subjected to specifically designed test cases.

1.2 References

- Election Assistance Commission 2005 Voluntary Voting System Guidelines (VVSG) Version 1.0, Volume I, "Voting System Performance Guidelines", and Volume II, "National Certification Testing Guidelines"
- Election Assistance Commission Testing and Certification Program Manual, Version 2.0
- Election Assistance Commission Voting System Test Laboratory Program Manual, Version 2.0
- National Voluntary Laboratory Accreditation Program NIST Handbook 150, 2016 Edition, "NVLAP Procedures and General Requirements (NIST Handbook 150-2016)", dated July 2016
- National Voluntary Laboratory Accreditation Program NIST Handbook 150-22, 2008 Edition, "Voting System Testing (NIST Handbook 150-22)", dated May 2008
- United States 107th Congress Help America Vote Act (HAVA) of 2002 (Public Law 107-252), dated October 2002
- Pro V&V, Inc. Quality Assurance Manual, Revision 7.0
- Pro V&V Test Report No. TR-01-01-CBG-004-01.04, "Test Report for EAC 2005 VVSG Certification Testing Clear Ballot Group ClearVote 2.0 Voting System", dated 09/26/2019
- EAC Requests for Interpretation (RFI) (listed on www.eac.gov)
- EAC Notices of Clarification (NOC) (listed on www.eac.gov)
- Clear Ballot Group's Technical Data Package *(A listing of the ClearVote 2.2 documents submitted for this test campaign is listed in Section 4.6 of this Test Plan)*

1.3 Terms and Abbreviations

This subsection lists terms and abbreviations relevant to the hardware, the software, or this Test Plan.

"ADA" – Americans with Disabilities Act 1990

"BMD" – Ballot Marking Device

"CM" – Configuration Management

"COTS" – Commercial Off-The-Shelf

"EAC" – United States Election Assistance Commission

"EMS" – Election Management System

"FCA" – Functional Configuration Audit

"HAVA" – Help America Vote Act

"ISO" – International Organization for Standardization

"NOC" – Notice of Clarification

"PC" – Personal Computer

"PCA" – Physical Configuration Audit

"QA" – Quality Assurance

"RAM" – Random Access Memory

"RFI" – Request for Interpretation

"TDP" – Technical Data Package

"UPS" – Uninterruptible Power Supply

"VSTL" – Voting System Test Laboratory

"VVSG" – Voluntary Voting System Guidelines

1.4 Project Schedule

The Project Schedule for the test campaign is located in Attachment A. The dates on the schedule are not firm dates but planned estimates based on the anticipated project work flow.

1.5 Scope of Testing

The scope of testing focused on evaluating the modifications detailed in Section 1.1.2 of this Test Plan. Primarily, these modifications focused on upgrades to the components of the previously certified ClearVote 2.0. To determine the ClearVote 2.2 test requirements, the submitted modifications were evaluated against each section of the EAC VVSG 1.0 to determine the applicable tests to be performed.
Based on this assessment, it was determined that multiple areas within the EAC VVSG 1.0 would be evaluated to encompass the required tests. A breakdown of the areas and associated tests is listed below:

- EAC VVSG 1.0 Volume 1, Section 2: Functional Requirements
    - System Integration Testing
    - Functional Configuration Audit (FCA)
    - Physical Configuration Audit (PCA), including System Loads & Hardening
    - Technical Documentation Package (TDP) Review
    - Accuracy Testing
    - Volume and Stress
- EAC VVSG 1.0 Volume 1, Section 3: Usability and Accessibility Requirements
    - Usability and Accessibility Testing
    - Technical Documentation Package (TDP) Review
- EAC VVSG 1.0 Volume 1, Section 4: Hardware Requirements
    - Environmental Requirements
        - Electrical Tests (ClearCast and ClearAccess)
        - Environmental Tests (ClearCast and ClearAccess)
        - Technical Documentation Package (TDP) Review
- EAC VVSG 1.0 Volume 1, Section 5: Software Requirements
    - Source Code Review, Compliance Build, Trusted Build, and Build Document Review
    - Technical Documentation Package (TDP) Review
    - Functional Configuration Audit (FCA)
- EAC VVSG 1.0 Volume 1, Section 7: Security Requirements
    - Security Testing
    - Technical Documentation Package (TDP) Review
    - Functional Configuration Audit (FCA)

1.5.1 Block Diagram

The system overview of the submitted voting system is depicted in Figure 1-1.

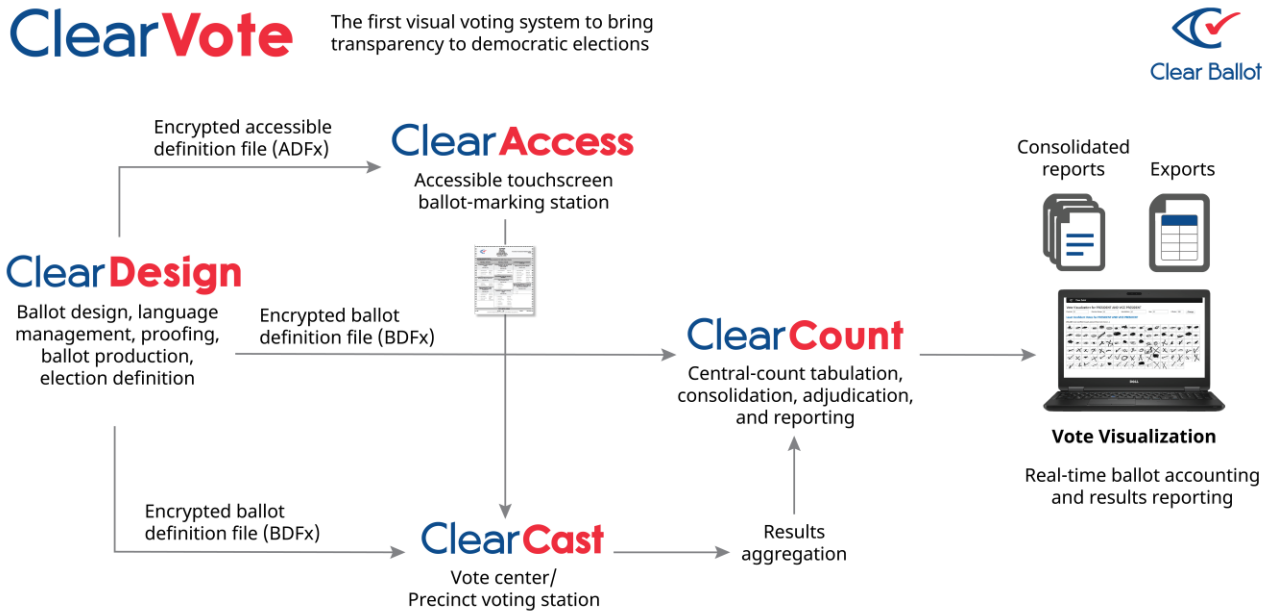

Figure 1-1. ClearVote 2.2 Product Relationship

1.5.2 System Limits

The system limits that CBG has stated to be supported by the ClearVote 2.2 Voting System are listed in the tables below.

Table 1-3 ClearVote System Limits

Characteristic	Limit
Election Parameters	
Precincts per election	3200
Splits per election	3200
District categories per election	100
Districts per single category	3200
Districts per election	3200
Contests per election	3200
Choices per election	3200
Choices per contest	300
Vote positions per side	420
Card styles per election	3200
Contests per ballot style	60
Card styles per precinct	50
Parties per election	50

Table 1-3 ClearVote System Limits *(continued)*

Characteristic	Limit
Counter groups per election	7
"Vote for" per contest	50
Languages per election	15
Cards per ballot (per language)	5
Write-ins per contest	50
Reporting Name Parameters (Reports Only)	
Election name (characters)	60
Jurisdiction name (characters)	60
Precinct name (characters)	60
Vote center name (characters)	60
Contest name (characters)	60
Candidate name (characters)	60
Party name (characters)	60
Write-in length (characters)	60
System Parameters	
Central-count scanners per network	10
Cards per precinct-voting device	10,000
Cards per central-count device	4,000,000

1.5.3 Supported Languages

The submitted voting system supports:

- English
- Spanish
- Chinese
- Korean
- Vietnamese
- Danish
- Dutch
- Flemish
- French
- German
- Italian
- Japanese
- Norwegian
- Portuguese
- Swedish

Due to the limited scope of testing, only English and Spanish language ballots will be cast during the performance of functional testing. Additionally, one character based language (Chinese) will be tested during System Integration Testing.

For the character based language, the ballot will be created by Pro V&V and voted utilizing both paper ballots and ADA voting devices along with all applicable peripherals. The Chinese Language for the ballot will be created using a readily available online translation tool. The translated language text will be entered into the ClearDesign Application. A ballot preview will be generated in the ClearDesign application. The Chinese characters displayed in the ballot preview will be compared to the characters generated by the online translation tool, to ensure that the characters match. The ballots will then be generated and printed, and the election loaded onto the tabulators and the BMD units. The Chinese characters displayed on both the printed ballots and displayed on the BMD units will be compared to the original Chinese Characters generated by the online translation tool to verify that the characters match.

1.5.4 Supported Functionality

The ClearVote 2.2 is designed to support the following voting variations:

- General Election
- Primary Election (Open and Closed)
- Early Voting
- Partisan/Non-Partisan Offices
- Write-In Voting
- Primary Presidential Delegation Nominations
- Straight Party Voting
- Split Precincts
- Vote for N of M
- Ballot Rotation
- Provisional or Challenged Ballots

1.5.5 VVSG

The ClearVote 2.2 shall be evaluated against the relevant requirements contained in the EAC VVSG 1.0.

1.5.6 RFIs

There are no RFIs released by the EAC as of the date of this Test Plan that pertain to this test campaign that were not in effect at the time of the baseline system certification.

1.5.7 NOCs

There are no NOCs released by the EAC as of the date of this Test Plan that pertain to this test campaign that were not in effect at the time of the baseline system certification.

2.0 PRE-CERTIFICATION TESTING AND ISSUES

This section describes previous testing performed prior to submitting the voting system to the EAC.

The following pre-certification testing has been performed on an "At-Risk" basis:

Technical Data Package (TDP) Review
An initial TDP review was performed on the documents submitted for this test campaign. The initial review is an abbreviated review performed in order to determine if the documents contain sufficient information.

Physical Configuration Audit (PCA)
An initial PCA has been performed to baseline the system prior to test campaign commencement. The PCA was performed by documenting each hardware and software component of the voting system by name, model, serial number, major component, and any other relevant information needed for identification. Photographs of each hardware component were also taken.

Hardware Testing
As of the release of this Test Plan, hardware testing is in process on a state-level test campaign. The results of this testing will be evaluated for re-use to satisfy this test effort.

2.1 Evaluation of Prior VSTL Testing

Pro V&V evaluated to the published Final Test Report for the ClearVote 2.0 in order to baseline the current system under test.

2.2 Evaluation of Prior Non-VSTL Testing

No prior non-VSTL testing of the ClearVote 2.2 modifications were considered for this test campaign

2.3 Known Field Issues

The ClearVote 2.2 is a modification to a previously certified system and has not been fielded for use.

3.0 MATERIALS REQUIRED FOR TESTING

The following sections list all materials needed to enable the test engagement to occur.

The materials required for testing of the ClearVote 2.2 Voting System include all materials to enable the test campaign to occur. This includes the applicable hardware and software as well as the TDP, test support materials, and deliverable materials, as described in the following subsections.

3.1 Software

This subsection lists the proprietary and COTS software to be provided by the manufacturer as part of the test campaign.

All software required for testing is identified in Section 1.6 of this test plan. Pro V&V will perform a comparison on the submitted source code against the previously certified versions. Pro V&V will review the submitted modified source code to the EAC VVSG 1.0 and the manufacturer-submitted coding standards.

3.2 Equipment

This subsection lists the proprietary and COTS equipment provided by the manufacturer as part of the test campaign.

For COTS equipment, every effort will be made to verify that the COTS equipment has not been modified for use. This will be accomplished by performing research using the COTS equipment manufacturer's websites based on the serial numbers and service tag numbers for each piece of equipment. Assigned test personnel will evaluate COTS hardware, system software and communications components for proven performance in commercial applications other than voting. For PCs, laptops, and servers, the service tag information will be compared to the system information found on each machine.

Physical external and internal examination will also be performed when the equipment is easily accessible without the possibility of damage. Hard drives, RAM memory, and other components will be examined to verify that the components match the information found on the COTS equipment manufacturer's websites.

Table 3-1. ClearVote 2.2 Voting System Equipment

Component	Model	Serial Number
ClearDesign Components		
Dell Latitude Laptop (client)	5580, 5590, 5500, 5511	2F3L3G2, 9W5DIN2, JV3WXY2, 13KWY33
Dell OptiPlex (client)	7440	JXDFHH2, 93VDB03
Dell Precision Tower (client)	T3620	GSKRMV2
Dell PowerEdge Server (server)	T130, T140, T440, R440, T630	5G0YLN2, 8BFH3W2, H6JZLN2, 55BGB03, GCHLHL2
Cisco 8-Port Switch	SG250-08	PSZ21451MLJ
Cisco Catalyst 8-Port Switch	C1000-8T-2G-L	PSZ240319T3
NetGear 8-Port Switch	FVS318G	40F266BA00280
TP-LINK 4-Port Switch	TL-R600VPN	2157090000334
TRENDNet 8-Port Switch	TEG-S80G	C217Z28001195
Corsair Flash Padlock 3 32 GB	Secure USB 3.0 Flash Drive	CMFPLA3B-32GB
Corsair Flash Voyager GTX	3.1 USB Drive	CMFVYGTX3C-128GB
Kingston Data Traveler Elite G2	3.0 USB Drive	DTEG2/64GB
SanDisk Extreme Go 64 GB USB	3.0 USB Drive	SDCZ800-064G-G46

Table 3-1. ClearVote 2.2 Voting System Equipment *(continued)*

Component	Model	Serial Number
SanDisk Extreme Pro 64 GB USB	3.0 USB Drive	SDCZ880-128G-G46
SanDisk Ultra Flair 32 GB USB	3.0 USB Drive	SDCZ73-032G-A46, SDCZ73-032G-G46
ClearAccess Components		
ELO 15 inch EloPOS	EPS15E3	J193011873
Oki Data Laser Printer	B432dn	AK5B007647A0 & AK91021454C0
Storm EZ Access Keypad	EZ08-22201	15000005, 15000007, 15020478
Storm EZ Access Keypad	EZ08-22000	20010073
Origin Instruments Sip/Puff Breeze with Headset	AC-0313-MUV	CBG-SP-001, 002, 003
Samson Over-Ear Stereo Headphones	SASR350	SR350J8G390 & SR350J8G396
Corsair Flash Padlock 3 32 GB	Secure USB 3.0 Flash Drive	CMFPLA3B-32GB
Corsair Flash Voyager GTX	3.1 USB Drive	CMFVYGTX3C-128GB
Kingston Data Traveler Elite G2	3.0 USB Drive	DTEG2/64GB
SanDisk Extreme Go 64 GB USB	3.0 USB Drive	SDCZ800-064G-G46
SanDisk Extreme Pro 64 GB USB	3.0 USB Drive	SDCZ880-128G-G46
SanDisk Ultra Flair 32 GB USB	3.0 USB Drive	SDCZ73-032G-A46, SDCZ73-032G-G46
ClearAccess Components		
Component	**Model**	**Serial Number**
Storm EZ Access Keypad	EZ08-22201	15000005, 15000007, 15020478
ELO 15 inch EloPOS	EPS15E3	J193011873
Oki Data Laser Printer	B432dn	AK5B007647A0 & AK91021454C0
Storm EZ Access Keypad	EZ08-22000	20010073
Origin Instruments Sip/Puff Breeze with Headset	AC-0313-MUV	CBG-SP-001, 002, 003
Samson Over-Ear Stereo Headphones	SASR350	SR350J8G390 & SR350J8G396
Corsair Flash Padlock 3 32 GB	Secure USB 3.0 Flash Drive	CMFPLA3B-32GB
Corsair Flash Voyager GTX	3.1 USB Drive	CMFVYGTX3C-128GB
Kingston Data Traveler Elite G2	3.0 USB Drive	DTEG2/64GB
SanDisk Extreme Go 64 GB USB	3.0 USB Drive	SDCZ800-064G-G46

Table 3-1. ClearVote 2.2 Voting System Equipment *(continued)*

Component	Model	Serial Number
SanDisk Extreme Pro 64 GB USB	3.0 USB Drive	SDCZ880-128G-G46
SanDisk Ultra Flair 32 GB USB	3.0 USB Drive	SDCZ73-032G-A46, SDCZ73-032G-G46
CyberPower Smart App UPS	PR1500RT2U	PY3HZ2002933, PY3HZ2003000
ClearCount Components		
Dell PowerEdge Server (ScanServer)	T130, T140, T330, T440, R440	5G0ZLN2, 8BFJ3W2, FHV9RD2, H6J5MN2, 55FDB03
Lenovo ThinkServer (ScanServer)	TS140	MJ0472UV
Dell Precision Tower (Election Administration)	T3620	GSKQMN2
Dell OptiPlex (Election Administration)	7440, XE3 SFF	JXDFHH2, 93YDB03
Dell Latitude Laptop (ScanStation)	5580, 5590, 5500, 5511	2F3L3G2, 5M5DIN2, 35YL9Y2, 13KWY33
Fujitsu Scanner	fi-7180	A20DC10302 & A20D000798
Fujitsu Scanner	fi-6800	A9HCA00737 & A9HCC00543
Fujitsu Scanner	fi-6400	AKHCC00362 & AKHCC00609
Fujitsu Scanner	fi-7800	C39C000034
Fujitsu Scanner	fi-7900	C30C000270
Cisco 8-Port Switch	SG250-08	PSZ21451MYX
Cisco Catalyst 8-Port Switch	C1000-8T-2G-L	PSZ240319T3
Cisco 24-Port Switch	C1000-24T-4X-L	FCW2417A0E6
NetGear 8-Port Switch	FVS318G	40F266BA00280
TP-LINK 4-Port Switch	TL-R600VPN	2157090000334
Component	**Model**	**Serial Number**
Cisco 26-Port Switch	SG250-26	DNI203400A6 & DNI203400AW
TRENDNet 8-Port Switch	TEG-S80G	C217Z28001195
Corsair Flash Padlock 3 32 GB	Secure USB 3.0 Flash Drive	CMFPLA3B-32GB
Corsair Flash Voyager GTX	3.1 USB Drive	CMFVYGTX3C-128GB
Kingston Data Traveler Elite G2	3.0 USB Drive	DTEG2/64GB
SanDisk Extreme Go 64 GB USB	3.0 USB Drive	SDCZ800-064G-G46
SanDisk Extreme Pro 64 GB USB	3.0 USB Drive	SDCZ880-128G-G46
SanDisk Ultra Flair 32 GB USB	3.0 USB Drive	SDCZ73-032G-A46, SDCZ73-032G-G46

Table 3-1. ClearVote 2.2 Voting System Equipment *(continued)*

Component	Model	Serial Number
APC Smart-UPS	SMT-1500C	3S1831X12280
ClearCast Components		
ClearCast	Model D Revision 4	CCD041904024
ClearCast Go	Model E Revision 5	CCER0401006
Corsair Flash Padlock 3 32 GB	Secure USB 3.0 Flash Drive	CMFPLA3B-32GB
Corsair Flash Voyager GTX	3.1 USB Drive	CMFVYGTX3C-128GB
Kingston Data Traveler Elite G2	3.0 USB Drive	DTEG2/64GB
SanDisk Extreme Go 64 GB USB	3.0 USB Drive	SDCZ800-064G-G46
SanDisk Extreme Pro 64 GB USB	3.0 USB Drive	SDCZ880-128G-G46
SanDisk Ultra Flair 32 GB USB	3.0 USB Drive	SDCZ73-032G-A46, SDCZ73-032G-G46
Ballot Bag	CV-1032-1.5, CV-1032-2.0	bag001, bag002
Ballot Box	CV-1033-1.5, CV-1033-2.0	box001, box002

3.3 Test Materials

This subsection lists the test materials required to execute the required tests throughout the test campaign.

The following materials are expected to be supplied by Clear Ballot to facilitate testing:

- USB flash drives
- test decks, 3 in. thermal paper, 24 lb. bond or similar paper for results reports
- ballot paper (60 lb. cover stock, 65 lb. cover stock, 90 lb. index stock)
- power cords, monitor cables, USB cables, and Ethernet cables
- security seals, security ties, and ballot marking devices.
- Other materials and equipment as required

3.4 Deliverable Materials

This subsection lists the materials identified by the manufacturer as materials deliverable to the end user for the system being tested.

Table 3-2. Voting System Deliverables

Material	Version	Description
ClearDesign	2.2	EMS Software
ClearAccess	2.2	BMD software
ClearCount	2.2	Central Count and Tabulation Software
ClearCast	2.2	Precinct Count Software
ClearVote 2.2 TDP*	2.2	Technical Data Package

*****Listed in Section 4.6

3.5 Proprietary Data

All data and documentation considered by the manufacturer to be proprietary will be identified and documented in an independent submission along with a Notice of Protected Information.

4.0 TEST SPECIFICATIONS

Certification testing of the Clear Ballot Group ClearVote 2.2 Voting System submitted for evaluation will be performed to ensure the applicable requirements of the EAC 2005 VVSG and the EAC Testing and Certification Program Manual, Version 2.2, are met. Additionally, all EAC Requests for Interpretation (RFI) and Notices of Clarification (NOC) relevant to the system under test will be incorporated in the test campaign. A complete listing of the EAC RFIs and NOCs is available on the EAC website.

4.1 Requirements (Strategy of Evaluation)

To evaluate the ClearVote 2.2 test requirements, the submitted modifications were evaluated against each section of the EAC VVSG 1.0 to determine the applicable tests to be performed. Based on this assessment, it was determined the following evaluations would be required to verify compliance of the modifications:

Limited Technical Documentation Package (TDP) Review

A limited TDP Review will be performed to ensure that all submitted modifications are accurately documented and that the documents meet the requirements of the EAC 2005 VVSG.

Source Code Review, Compliance Build, Trusted Build, and Build Document Review

The source code review will be based on the source code changes made since the previous system was certified.

Physical Configuration Audit (PCA)

A PCA will be performed to compare the voting system submitted for certification testing to the manufacturer's technical documentation. The purpose of the PCA will be to verify that the submitted hardware is unmodified from the previously certified voting system

Limited Functional Configuration Audit (FCA)

The FCA for this test campaign will include an assessment of the submitted modifications and will include inputs of both normal and abnormal data during test performance.

This evaluation will utilize baseline test cases as well as specifically designed test cases and will include predefined election definitions for the input data. As part of the FCA, one primary and one general election will be executed to verify that each of the submitted modifications have been successfully implemented.

Hardware Testing

The hardware tests specified in the VVSG are divided into two categories: non-operating and operating. The non-operating tests apply to the elements of the system that are intended for use at poll site locations and are intended to simulate the storage and transport of equipment between the storage facility and the polling location. The Operating tests apply to the entire system, including hardware components that are used as part of the voting system telecommunications capability, and are intended to simulate conditions that the voting system may encounter during operation. Prior to and immediately following each required non-operating and operating test, the system shall be subjected to an operational status check.

The requirements in this section shall be tested and/or evaluated by personnel verified by Pro V&V to be qualified to perform the testing.

System Integration Test

The system integration tests will be performed to ensure the ClearVote 2.2 functions as a complete system. The system integration testing addresses the integration of the hardware and software. This testing focuses on the compatibility of the voting system software components and subsystems with one another and with other components of the voting system. During test performance, the system is configured as would be for normal field use.

Accuracy Test

An Accuracy Test will be performed to ensure the ClearVote 2.2 correctly captures, stores, consolidates, and reports the specific ballot selections, and absence of selections, for each ballot position.

Usability and Accessibility

The requirements in this section shall be tested during the Usability and Accessibility Testing. This evaluation will utilize baseline test cases as well as specifically designed test cases and will include predefined election definitions for the input data.

The usability testing focuses on the usability of the system being tested. Usability is defined generally as a measure of the effectiveness, efficiency, and satisfaction achieved by a specified set of users with a given product in the performance of specified tasks. In the context of voting, the primary user is the voter, the product is the voting system, and the task is the correct recording of the voter ballot selections. Additional requirements for task performance are independence and privacy: the voter should normally be able to complete the voting task without assistance from others, and the voter selections should be private. Accessibility evaluates the requirements for accessibility. These requirements are intended to address HAVA 301 (a) (3) (B).

Security

The requirements in this section shall be tested during the source code review, security tests, and FCA.

To evaluate the integrity of the system, Pro V&V will develop specifically designed test cases in an attempt to defeat the access controls and security measures documented in the system TDP as well verifying compliance to EAC RFI 2012-05. An evaluation of the system will be accomplished by utilizing a combination of functional testing and source code review.

During the security testing, the system shall be inspected for various controls and measures that are in place to meet the objectives of the security standards which include: protection of the critical elements of the voting system; establishing and maintaining controls to minimize errors; protection from intentional manipulation, fraud and malicious mischief; identifying fraudulent or erroneous changes to the voting system; and protecting the secrecy in the voting process.

4.1.1 Rationale for 'Not Applicable' Requirements

All requirements that were excluded from the previous test campaign (ClearVote 2.0) were also deemed not applicable to this test campaign due to the submitted modifications not impacting the specific requirements.

4.2 Hardware Configuration and Design

Though some of the hardware components have changed, the configuration and design of the system are unchanged from the baseline system. The ClearVote 2.2 Voting System is a paper-based voting system that consists of the following major components: ClearDesign, ClearAccess, ClearCast, and ClearCount. ClearVote is comprised of two proprietary hardware components (ClearCast and ClearCast Go) and two COTS hardware components (ClearCount) and (ClearAccess). All ClearDesign functions are managed by proprietary software running on COTS PCs/laptops/servers, which is excluded from hardware testing.

ClearCast – The ClearCast component was previously subjected to hardware testing. The ClearCast Go component will be subjected to the full suite of hardware and electrical testing required by the EAC 2005 VVSG. Both components will be subjected to Usability, Security, Maintainability, Availability, and Accuracy Testing.

ClearAccess – The ClearAccess component will be subjected to the full suite of hardware and electrical testing required by the EAC 2005 VVSG as well as Usability, Security, Maintainability, Availability, and Accuracy Testing.

ClearCount – The ClearCount component is unmodified COTS equipment and is exempt from non-operational hardware testing. ClearCount was previously subjected to Temperature/Power Variation Testing in conjunction with the ClearCast and ClearAccess in addition to being utilized in functional and system level testing such as accuracy, volume and stress, and system integration during the baseline test campaign, the results of which are contained in the final certification test report for the baselined system.

ClearDesign – The ClearDesign component is unmodified COTS equipment and is exempt from non-operational hardware testing.

4.3 Software System Functions

The ClearVote 2.2 Election Management System (EMS) consists of a set of applications responsible for all pre-voting and post-voting activities used in election definition and management process. The ClearVote 2.2 EMS applications are as follows:

- ClearDesign
- ClearCount

4.4 Test Case Design

Test cases are designed based on the manufacturer's design specifications and the relevant technical requirements set forth by the VVSG. Test cases shall be examined based on the following aspects of the voting system:

- Hardware qualitative examination design
- Hardware environmental test case design
- Software module test case design and data
- Software functional test case design
- System level test case design

Test cases shall provide information regarding the sequence of actions to be performed for the execution of a test, the requirements being met, the test objective, test configuration, equipment needed, special requirements, assumptions, and pass/fail criteria. Once the test cases are finalized, they will be validated and published for use in the test campaign. The validation of the test case will be accomplished by Technical Review and Approval. This validation will include the following: confirmation of adequate test coverage of all requirements; confirmation that test case results are not ambiguous and gave objective pass/fail criteria; and confirmation that any automated test suites will produce valid results.

Prior to execution of the required test cases, the system under test will undergo testing initialization. The testing initialization will seek to establish the baseline for testing and ensure that the equipment submitted for testing matches the expected testing candidate and that all equipment and supplies are present.

The following will be completed during the testing initialization:

- Ensure proper setup of equipment. Check network connections, power cords, keys, etc.
- Check version numbers of (system) software and firmware on all components.
- Verify the presence of only the documented COTS.
- Ensure removable media is formatted and does not contain any data.
- Ensure batteries are fully charged.
- Inspect supplies and test decks.
- Record protective counter on all tabulators.
- Review physical security measures of all equipment.

- Record basic observations of the testing setup and review.
- Record serial numbers of equipment.
- Retain proof of version numbers.

4.4.1 Hardware Qualitative Examination Design

Previous hardware examinations were performed on the certified baseline system (ClearVote 2.0). The updates to the modified system (ClearVote 2.2) require the following hardware testing to be performed.

Electrical Tests:

- Electrical Power Disturbance – ClearAccess , ClearCast Go
- Electromagnetic Radiation – ClearAccess , ClearCast Go
- Electrostatic Disruption – ClearAccess , ClearCast Go
- Electromagnetic Susceptibility –ClearAccess, ClearCast Go
- Electrical Fast Transient – ClearAccess , ClearCast Go
- Lightning Surge – ClearAccess, ClearCast Go
- Conducted RF Immunity – ClearAccess, ClearCast Go
- Magnetic Fields Immunity – ClearAccess, ClearCast Go
- Electrical Supply – ClearAccess , ClearCast Go

Environmental Tests:

- Bench Handling – ClearAccess , ClearCast Go
- Vibration – ClearAccess , ClearCast Go
- Temperature Power Variation – ClearAccess, ClearCast Go
- Humidity – ClearAccess, ClearCast Go
- Low/High Temperature – ClearAccess , ClearCast Go

4.4.2 Hardware Environmental Test Case Design

Previous hardware examinations were performed on the certified baseline system (ClearVote 2.0). The updates to the modified system (ClearVote 2.2) shall be subjected to the tests specified in Section 4.4.1. Testing will be performed by personnel verified by Pro V&V to be qualified to perform the test. Pro V&V will utilize NTS Longmont for the performance of the electrical and environmental tests. All pre/post-tests shall be conducted by Pro V&V personnel.

4.4.3 Software Module Test Case Design and Data

Pro V&V shall review the manufacturer's program analysis, documentation, and module test case design and shall evaluate the test cases for each module with respect to flow control parameters

and entry/exit data. As needed, Pro V&V shall design additional test cases to satisfy the coverage criteria specified in Volume II, Section 7.2.1.

Component Level Testing will be implemented during the FCA for each component and subcomponent. During the Source Code Review and Compliance Builds, Pro V&V will utilize limited structural-based techniques (white-box testing). Additionally, specification-based techniques (black-box testing) will be utilized for the individual software components.

Pro V&V shall define the expected result for each test and the ACCEPT/REJECT criteria for certification. If the system performs as expected, the results will be accepted. If the system does not perform as expected, an analysis will be performed to determine the cause. The test will be repeated in an attempt to reproduce the results. If the failure can be reproduced and the expected results are not met, the system will have failed the test. If the results cannot be reproduced, the test will continue. All errors encountered will be documented and tracked through resolution.

4.4.4 Software Functional Test Case Design and Data

Pro V&V shall review the manufacturer-submitted test plans and data to verify that the individual performance requirements specified in the EAC 2005 VVSG and the TDP are reflected in the software. As part of this process, Pro V&V shall review the manufacturer's test case design and prepare a detailed matrix of system functions and the test cases that exercise them. During this review, emphasis shall be placed on those functions where the manufacturer data on module development reflects significant debugging problems, and on functional tests that resulted in high error rates.

Pro V&V shall also prepare a test procedure describing all test ballots, operator procedures, and the data content of output reports. Pro V&V shall define abnormal input data and operator actions and then design test cases to verify that the system is able to handle and recover from these abnormal conditions. Pro V&V shall define the expected result for each test and the ACCEPT/REJECT criteria for certification. If the system performs as expected, the results will be accepted. If the system does not perform as expected, an analysis will be performed to determine the cause. The test will be repeated in an attempt to reproduce the results. If the failure can be reproduced and the expected results are not met, the system will have failed the test. If the results cannot be reproduced, the test will continue. All errors encountered will be documented and tracked through resolution.

4.4.5 System-Level Test Case Design

System Level testing will be implemented to evaluate the complete system. This testing will include all proprietary components (software, hardware, and peripherals) and COTS components (software, hardware, and peripherals) in a configuration of the system's intended use. For software system tests, the tests shall be designed according to the stated design objective without consideration of its functional specification. The system level hardware and software test cases shall be prepared independently to assess the response of the hardware and software to a range of conditions.

4.5 Security Functions

The objective of the Security Testing is to evaluate the effectiveness of the voting system in detecting, preventing, recording, reporting, and recovering from security threats. To evaluate the integrity of the system, Pro V&V shall develop specifically designed test cases in an attempt to

defeat the access controls and security measures documented in the system TDP. An evaluation of the system shall be accomplished by utilizing a combination of functional testing and source code review. All findings will be reported to the EAC and CBG.
The test methods for performing the Security Testing are execution and review. Prior to performance of Security testing, the examiner will verify that security hardening scripts have been properly applied to system components per the system documentation. The examiner will review the submitted TDP to verify that documented access and physical controls are in place. Following the documented procedures, the examiner will configure the voting system for use and functionality to verify that the documented controls are in place and adequate and meet the stated requirements.

Physical Security will be tested by setting up the system as described in the TDP and then examining the effectiveness and comprehensiveness of physical security measures. Administrative Security will be tested by examining the system's documented security instructions and procedures for effectiveness and breadth. Logical security will be tested as part of FCA testing by a recognized security expert who not only will review the physical and administrative testing outcomes, but will perform the following tests on system components: SCAP Scans and Physical Bypass Attempts. Logical security testing will assess the effectiveness of the security hardening scripts applied during the system setup and install process.

4.6 TDP Evaluation

In order to determine compliance of the modified TDP documents with the EAC 2005 VVSG, a limited TDP review shall be conducted. This review will focus on TDP documents that have been modified since the certification of the baseline system. The review will consist of a compliance review to determine if each regulatory, state, or manufacturer-stated requirement has been met based on the context of each requirement. Results of the review of each document will be entered on the TDP Review Checklist and reported to the manufacturer for disposition of any anomalies. This process will be ongoing until all anomalies are resolved. Any revised documents during the TDP review process will be compared with the previous document revision to determine changes made, and the document will be re-reviewed to determine whether subject requirements have been met.

A listing of all documents contained in the ClearVote 2.2 TDP is provided in Table 4-1.

Table 4-1. TDP Documents

Document Number	Description	Version
ClearVote Documents		
100101	ClearVote 2.2 Approved Parts List	1.2.3
100067	ClearVote 2.2 Ballot Stock and Printing Specification	1.0.14
100057	ClearVote 2.2 Configuration Management Plan	1.0.19
100069	ClearVote 2.2 Glossary	1.0.12
100058	ClearVote 2.2 Personnel Deployment and Training Plan	1.0.14
100059	ClearVote 2.2 Quality Assurance Program	1.0.16

Table 4-1. TDP Documents *(continued)*

Document Number	Description	Version
100086	ClearVote 2.2 Security Policy	1.0.15
100071	ClearVote 2.2 System Overview	1.1.3
100073	ClearVote 2.2 Test and Verification Specification	1.0.14
100128	ClearVote 2.1 Change Notes	1.0.3
100128-10018	ClearVote 2.2 Change Notes	02/08/2021
ClearDesign Documents		
100011	ClearDesign 2.2 Acceptance Test Checklist	1.0.9
100062	ClearDesign 2.2 Administration Guide	1.0.13
100083	ClearDesign 2.2 Build Procedures	1.0.10
100103	ClearDesign 2.2 Database Specifications	1.0.9
100046	ClearDesign 2.2 Functionality Description	1.0.15
100098	ClearDesign 2.2 Hardware Specification	1.0.13
100063	ClearDesign 2.2 Installation Guide	2.0.1
100082	ClearDesign 2.2 Maintenance Guide	1.0.13
100045	ClearDesign 2.2 Security Specification	1.0.15
100072	ClearDesign 2.2 Software Design and Specification	1.0.21
100043	ClearDesign 2.2 System Overview	1.0.17
100133	ClearDesign 2.2Accessible Definition File Guide	1.0.3
1000131	ClearDesign 2.2 Ballot Definition File Guide	1.0.3
1000074	ClearDesign 2.2 System Identification Guide	1.1
1000041	ClearDesign 2.2 User Guide	3.0
ClearCount Documents		
100102	ClearCount 2.2 Acceptance Test Checklist	1.0.13
100009	ClearCount 2.2 Build Procedures	1.5
100005	ClearCount 2.2 Database Specification	1.0.9
100004	ClearCount 2.2 Election Administration Guide	2.0
100006	ClearCount 2.2 Election Preparation and Installation Guide	1.2.14
100021	ClearCount 2.2 Functionality Description	1.0.15
100022	ClearCount 2.2 Hardware Specification	1.0.15
100023	ClearCount 2.2 Maintenance Guide	1.0.16

Table 4-1. TDP Documents *(continued)*

Document Number	Description	Version
100070	ClearCount 2.2 Reporting Guide	1.1.3
100013	ClearCount 2.2 Scanner Operator Guide	1.1.9
100026	ClearCount 2.2 Security Specification	1.0.16
100019	ClearCount 2.2 Software Design and Specification	1.0.16
100024	ClearCount 2.2 System Operations Procedures	2.0
100025	ClearCount 2.2 System Overview	1.0.15
---	ClearCount 2.2 Quick Guide XML Report Conversion Tool	---
1000047	ClearCount 2.2 System Identification Guide	1.1
ClearCast Documents		
1000134	ClearCast 2.2 Hardware Acceptance Test Checklist	1.2
1000135	ClearCast 2.2 Software Acceptance Test Checklist	1.1.0
1000097	ClearCast 2.2 System Identification Guide	TBD
100094	ClearCast 2.2 Build Procedures	1.2.8
100079	ClearCast 2.2 Functionality Description	1.5.5
100080	ClearCast 2.2 Installation Guide	1.4.3
100081	ClearCast 2.2 Hardware Specification	1.5.2
100089	ClearCast 2.2 Maintenance Guide	2.1
100090	ClearCast 2.2 Poll Worker Guide	1.7.2
100084	ClearCast 2.2 Security Specification	1.4.5
100093	ClearCast 2.2 Software Design and Specification	1.4.4
100100	ClearCast 2.2 Supervisor Guide	1.8.3
100078	ClearCast 2.2 System Overview	6.0
100148	ClearVote 2.2 ClearCast Go System Identification Guide	1.3.1
100142	ClearVote 2.2 ClearCast Go Maintenance Guide	1.1
100143	ClearVote 2.2 ClearCast Go Poll Worker Guide	1.0
100144	ClearVote 2.2 ClearCast Go Supervisor Guide	1.0.1
---	ClearCast Go 2.2 Hardware Acceptance Test Checklist	1.0
100146	ClearVote 2.2 ClearCast Go Installation Guide	1.0
100145	ClearVote 2.2 ClearCast Go Build Procedures	1.0.1

Table 4-1. TDP Documents *(continued)*

Document Number	Description	Version
ClearAccess Documents		
100109	ClearAccess 2.2 Acceptance Test Checklist	1.1.4
100051	ClearAccess 2.2 Build Procedures	1.1.5
100049	ClearAccess 2.2 Functionality Description	1.5.6
100085	ClearAccess 2.2 Hardware Specification	1.5.4
100053	ClearAccess 2.2 Installation Guide	1.7.8
100052	ClearAccess 2.2 Maintenance Guide	1.8.3
100054	ClearAccess 2.2 Poll Worker Guide	1.8.5
100050	ClearAccess 2.2 Security Specification	1.5
100099	ClearAccess 2.2 Software Design and Specification	1.5.5
100055	ClearAccess 2.2 Supervisor Guide	1.8.5
100044	ClearAccess 2.2 System Overview	1.6.7
100056	ClearAccess 2.2 Voter Guide	1.1.7
1000126	ClearAccess 2.2 Hardware Compliance Addendum	---
1000038	ClearAccess 2.2 System Identification Guide	1.4.1

4.7 Source Code Review

Pro V&V will review the submitted source code to the EAC 2005 VVSG and the manufacturer-submitted coding standards. Prior to initiating the software review, Pro V&V shall verify that the submitted documentation is sufficient to enable:

(1) A review of the source code and (2) Pro V&V to design and conduct tests at every level of the software structure to verify that design specifications and performance guidelines are met.

4.8 Physical Configuration Audit (PCA)

The Physical Configuration Audit (PCA) compares the voting system components submitted for qualification to the manufacturer's technical documentation, and shall include the following activities:

- Establish a configuration baseline of software and hardware to be tested; confirm whether manufacturer's documentation is sufficient for the user to install, validate, operate, and maintain the voting system.
- Verify software conforms to the manufacturer's specifications; inspect all records of manufacturer's release control system; if changes have been made to the baseline version, verify manufacturer's engineering and test data are for the software version submitted for certification.

- If the hardware is non-COTS, Pro V&V shall review drawings, specifications, technical data, and test data associated with system hardware to establish system hardware baseline associated with software baseline.
- Review manufacturer's documents of user acceptance test procedures and data against system's functional specifications; resolve any discrepancy or inadequacy in manufacturer's plan or data prior to beginning system integration functional and performance tests.
- Subsequent changes to baseline software configuration made during testing, as well as system hardware changes that may produce a change in software operation are subject to re-examination.

4.9 Functional Configuration Audit (FCA)

The Functional Configuration Audit (FCA) targets the specific functionality claimed by the manufacturer to ensure the product functions as documented. This testing uses both positive and negative test data to test the robustness of the system. The FCA encompasses an examination of manufacturer tests, and the conduct of additional tests, to verify that the system hardware and software perform all the functions described in the manufacturer's documentation submitted in the TDP (such as system operations, voter manual, maintenance, and diagnostic testing manuals). It includes a test of system operations in the sequence in which they would normally be performed. These system operations and functional capabilities are categorized as follows by the phase of election activity in which they are required:

- Overall System Capabilities: These functional capabilities apply throughout the election process. They include security, accuracy, integrity, system audit ability, election management system, vote tabulation, ballot counters, telecommunications, and data retention.
- Pre-voting Capabilities: These functional capabilities are used to prepare the voting system for voting. They include ballot preparation, the preparation of election-specific software (including firmware), the production of ballots, the installation of ballots and ballot counting software (including firmware), and system and equipment tests.
- Voting System Capabilities: These functional capabilities include all operations conducted at the polling place by voters and officials including the generation of status messages.
- Post-voting Capabilities: These functional capabilities apply after all votes have been cast. They include closing the polling place; obtaining reports by voting machine, polling place, and precinct; obtaining consolidated reports; and obtaining reports of audit trails.
- Maintenance, Transportation and Storage Capabilities: These capabilities are necessary to maintain, transport, and store voting system equipment.

In addition to functioning according to the manufacturer's documentation, tests will be conducted to insure all applicable EAC 2005 VVSG requirements are met.

4.10 Accuracy

The accuracy test ensures that each component of the voting system can each process at least 1,549,703 consecutive ballot positions correctly within the allowable target error rate. The Accuracy test is designed to test the ability of the system to "capture, record, store, consolidate and report" specific selections and absences of a selection. The required accuracy is defined as an error rate. This rate is the maximum number of errors allowed while processing a specified volume of data. For paper-based voting systems the ballot positions on a paper ballot must be scanned to detect selections for individual candidates and contests and the conversion of those selections detected on the paper ballot converted into digital data.

4.11 Volume & Stress

Tests to investigate the system's response to conditions that tend to overload the system's capacity to process, store, and report data. The test parameters will focus on the system's stated limits and the ballot logic for areas such as the maximum number of active voting positions, maximum number of ballot styles, maximum candidates, maximum contests, and stated limits within the EMS. This test will be utilized to ensure the system can achieve the manufacturer's TDP claims of what the system can support. Testing will be performed by exercising an election definition and test cases developed specifically to test for volume and stress conditions of the system being tested.

4.12 System Integration

The System Integration area of testing is a system level test that evaluates the integrated operation of both hardware and software. Compatibility of the voting system software components or subsystems with one another, and with other components of the voting system environment, shall be determined through functional tests integrating the voting system software with the remainder of the system. Additionally, the system shall be configured exactly as it would for normal field use per the procedures detailed in the ClearVote 2.2 voting system technical documentation. This includes connecting all supporting equipment and peripherals including ballot boxes, voting booths (regular and accessible), and any physical security equipment such as locks and ties.

5.0 TEST DATA

The following subsections provide information concerning test data recording, criteria, and reduction.

5.1 Data Recording

All equipment utilized for test data recording shall be identified in the test data package. The output test data shall be recorded in an appropriate manner as to allow for data analysis. For source code and TDP reviews, results shall be compiled in reports and submitted to Clear Ballot Group for resolution.

5.2 Test Data Criteria

The ClearVote 2.2 Voting System shall be evaluated against all applicable requirements contained in the EAC 2005 VVSG. The acceptable range for system performance and the expected results for each test case shall be derived from the manufacturer-submitted technical documentation and the EAC 2005 VVSG.

5.3 Test Data Reduction

Test data shall be processed and recorded in the test log book and the relevant Test Cases.

6.0 TEST PROCEDURE AND CONDITIONS

The following subsections detail the facility requirements, test setup conditions, and sequence of testing.

6.1 Facility Requirements

Unless otherwise annotated, all testing shall be conducted at the Pro V&V test facility located in Huntsville, AL, by personnel verified by Pro V&V to be qualified to perform the test. Unless otherwise specified herein, testing shall be performed at the following standard ambient conditions and tolerances:

- Temperature: 68-75◦ F (±4◦F)
- Relative Humidity: Local Site Humidity
- Atmospheric Pressure: Local Site Pressure
- Time Allowable Tolerance: ±5%

Testing performed at third-party laboratories will be subject to the test parameters and tolerances defined by VVSG. If not specified in VVSG, the test facilities' standard parameters and tolerances will be used. These will be reported in the final Test Report.

6.2 Test Set-up

All voting system equipment shall be received and documented using Pro V&V proper QA procedures. Upon receipt of all hardware, an inspection will be performed to verify that the equipment received is free from obvious signs of damage and/or degradation that may have occurred during transit. If present, this damage shall be recorded, photographed, and reported to the Clear Ballot Group Representative. Additionally, a comparison shall be made between the recorded serial numbers/part numbers and those listed on shipper's manifest and any discrepancies shall be reported to the Clear Ballot Group Representative. TDP items and all source code received shall be inventoried and maintained by Pro V&V during the test campaign.

During test performance, the system shall be configured as it would be for normal field use. This includes connecting all supporting equipment and peripherals.

6.3 Test Sequence

The ClearVote 2.2 Voting System will be evaluated against all applicable requirements in the EAC 2005 VVSG. There is no required sequence for test performance.

6.4 Test Operations Procedure

Pro V&V will identify PASS/FAIL criteria for each executed test case. The PASS/FAIL criteria will be based on the specific expected results of the system. In the case of an unexpected result that deviates from what is considered standard, normal, or expected, a root cause analysis will be performed. Pro V&V will evaluate every applicable EAC 2005 VVSG requirement. Any deficiencies noted will be reported to the EAC and the manufacturer. If it is determined that there is insufficient data to determine compliance, this test plan will be altered and additional testing will be performed.

ATTACHMENT A
PROJECT SCHEDULE

Task Name	Start Date	End Date	Assigned To	Duration	Predecessors
EAC Application & TRR	**01/04/21**	**01/20/21**		**13d**	
Application Submitted to EAC	01/04/21	01/04/21	Brent	1d	
TRR	01/05/21	01/12/21	Brent	6d	2
Application Approval from EAC	01/13/21	01/20/21	Brent	6d	3
TDP	**01/13/21**	**03/29/21**		**54d**	
Initial Review	01/13/21	01/14/21	Stacey	2d	3
Compliance Review	01/15/21	03/25/21	Stacey	50d	6
Final review	03/26/21	03/29/21	Stacey	2d	7
Test Plan	01/19/21	05/12/21		82d	
Test Plan Creation	01/19/21	03/24/21	Wendy	47d	
Vendor Review & Comments	03/25/21	03/26/21	Wendy	2d	10
EAC Submission and Review	03/29/21	04/23/21	Wendy	20d	11
VSTL Comment Review & Update	04/26/21	04/27/21	Wendy	2d	12
EAC Submission & Review of Revision	04/28/21	05/11/21	Wendy	10d	13
EAC Approved Test Plan	05/12/21	05/12/21	Wendy	1d	14
Source Code	**01/21/21**	**02/16/21**		**19d**	
Automated Review	01/21/21	01/21/21	Jack	1d	4
Source Code Review	01/21/21	01/27/21	Jack	5d	4
Source Code Re-Review	01/28/21	02/09/21	Jack	9d	18
Document Review	02/10/21	02/10/21	Brent	1d	19
Compliance Build	02/11/21	02/16/21	Brent	4d	20
System Delivery & Setup	**01/11/21**	**03/15/21**		**46d**	
PCA	01/11/21	01/11/21	Brent	1d	
System Setup	01/12/21	01/13/21	Brent	2d	23
System Loads & Hardening	02/17/21	03/15/21	Brent	19d	21
Hardware Testing	**03/16/21**	**03/18/21**		**3d**	
Maintainability	03/16/21	03/16/21	Brent	1d	25
Electrical Supply	03/17/21	03/18/21	Brent	2d	27
System Level Testing	**03/16/21**	**05/07/21**		**39d**	
FCA	03/16/21	04/05/21	Brent	15d	25
Security	04/06/21	04/07/21	Brent	2d	30
Usability	04/08/21	04/12/21	Brent	3d	31
Accessibility	04/08/21	04/09/21	Brent	2d	31
Volume and Stress	04/13/21	04/15/21	Brent	3d	32
Accuracy	04/16/21	04/21/21	Brent	4d	34
Regression Testing	04/22/21	04/23/21	Brent	2d	35
Trusted Build	04/26/21	04/28/21	Jack	3d	36
System Loads & Hardening	04/29/21	04/30/21	Brent	2d	37
System Integration	05/03/21	05/07/21	Brent	5d	38
Test Report	**04/29/21**	**06/29/21**		**44d**	
Test Report Creation	04/29/21	05/12/21	Wendy	10d	37

Vendor Review & Comments	05/13/21	05/13/21	Wendy	1d	41
EAC Submission & Review	05/14/21	06/10/21	Wendy	20d	42
VSTL Comment Review & Update	06/11/21	06/14/21	Wendy	2d	43
EAC Submission & Review of Revision	06/15/21	06/28/21	Wendy	10d	44
EAC Approved Test Report	06/29/21	06/29/21	Wendy	1d	45

ATTACHMENT B
MODIFICATION TABLE

Table B-1. System Modifications

Issue key	Component	Change Note Description
ClearAccess		
SW-8995	ClearAccess	ClearAccess' barcode scanner now recovers more gracefully if disabled due to an electro-static discharge.
SW-8973	ClearAccess	Fixed a bug that caused the Sound/Screen options to not be properly focused when selected via the touchscreen.
SW-8513	ClearAccess	The ClearAccess installation media have been updated to include additional files from the graphics driver pack that are needed for successful installation of the graphics driver.
SW-8451	ClearAccess	When on the main page, the user can now only click on any of the buttons once. After clicked once and while the data is loading, the links are disabled and buttons are darkened.
SW-8394	ClearAccess	All instances of How to Vote are now How to vote. Mainly this is on the help screen in ClearAccess. This is changed in the default languages on ClearDesign
SW-8369	ClearAccess	Previously the documentation said that the default text-to-speech (TTS) voice was set to the female voice during installation but it was not. The default TTS voice will now actually be set to the female during installation.
SW-8341	ClearAccess	Disables startup programs as a part of ClearAccess installation.
SW-8273	ClearAccess	Ensure all cryptographic functions use the FIPS certified library in FIPS mode.
SW-8155	ClearAccess	A new model of the ClearAccess touchscreen, the Elo POS, has been added to the APL.
SW-7726	ClearAccess	The ClearAccess installation documentation has been updated with details on BIOS settings that reduce the likelihood of the touchscreen becoming unresponsive, which has been seen intermittently in earlier releases.
SW-7529	ClearAccess	The ClearAccess installer no longer hangs when a password contains more than 14 characters.
SW-7363	ClearAccess	ClearAccess now preserves the initial font size ratio as seen on the ballot when displaying contest description information.
SW-7326	ClearAccess	ClearAccess ballot style list loading speed has been improved and stabilized.
SW-6227	ClearAccess	The upper limit for a stub size has increased to five inches.
SW-8303	ClearAccess	Since loading a large ADF can be slow, the OK and Back buttons have been disabled during the loading process to prevent the election loading and validation from being initiated multiple times.
SW-7178	ClearAccess	The exact font size is scaled relative to the Zoom option (Small, Default, Large, Extra Large on the Settings screen of ClearAccess.
SW-8232	ClearAccess	Previously the logs would occasionally be corrupted when shutting down the system, this issue has been corrected in this release.
SW-7844	ClearAccess	This allows ClearAccess to accept the new ADF version updated to support multi-language ballots
SW-7901	ClearAccess	The release has added support for the Elo barcode scanner that attaches directly to the Elo POS system.
SW-7292	ClearAccess	The various forms of the "logout" have changed to "log out" in the ClearAccess user interface.

Table B-1. System Modifications *(continued)*

Issue key	Component	Change Note Description
SW-8055	ClearAccess	ClearAccess now supports multiple languages on the same ballot printing. The voting experience remains the same as before whereby the voter only navigates through their chosen language. The printed ballot will be multi-language however.
SW-8111	ClearAccess	Because the ADF now contains a field for "PDFNamingConvention", the ClearAccess schema has been updated to verify this field. This value is used when determining how to name ballot PDF files generated in ClearDesign.
SW-7386	ClearAccess, ClearCast	The Erase key has been renamed Delete. The "Quote" key has been fixed.
SW-6291	ClearAccess	Conditional straight-party voting—only parties that have a candidate represented on a given ballot style are represented in the straight-party contest.
SW-6749	ClearAccess	The Back button now works correctly on the Select Vote Center screen.
SW-6112	ClearAccess	Previously, when you were logged in as an Election Administrator, a Change Vote Center button appeared on the No Election Loaded screen. Clicking this button did not accomplish anything. This button no longer appears.
SW-6483	ClearAccess	In the System Log for ClearAccess, the header cell Valid has changed to Validated. This column describes the validation status of the transaction, which is one of the following: • Validated • Validated HMAC • Error: text describing the error.
SW-7096	ClearAccess	Previously, ClearAccess read write-in names with no space between the write-in and the colon. This release has fixed this issue.
		ClearCast
SW-8982	ClearCast	There is a new entry in the About ClearCast Dialogue that states the ClearCast Model. It has possible values of: 'ClearCast Model D' or 'ClearCast Go' depending on what hardware the cast is on.
SW-8775	ClearCast	The version of Ubuntu has been upgraded to 18.04.5.
SW-8656	ClearCast	Scanner calibration no longer causes a shutdown screen to appear. Scanner calibration is also done asynchronously to prevent the python global interpreter thread from locking up.
SW-8556	ClearCast	Fixed an issue where misleading error messages would be written to the logs about not being able to reach the USB drives when the drives had been unmounted before shutdown.
SW-8558	ClearCast	A log entry is now added on successful and unsuccessful validation of the data on the USB drives. This occurs when a user logs in to ClearCast.
SW-8434	ClearCast	New graphics have been added to the Election Management page to indicate which physical drive location corresponds to USB 1 and USB 2.
SW-8260	ClearCast	Ensure all cryptographic functions are used in FIPS mode.
SW-8169	ClearCast	The USB drives used in ClearCast are no longer mounted with the "sync" option in order to increase the performance of writing results to the drives. To maintain data integrity, explicit sync operations have been added to code when writing to the drives.

Table B-1. System Modifications *(continued)*

Issue key	Component	Change Note Description
SW-7983	ClearCast	Fixed error logging so that each instance of a ballot jam is logged only one time rather than repeatedly until the jam is cleared.
SW-7972	ClearCast	Election data is now synced to the USB drives and validated after every successfully accepted card. This ensures that all data has been written successfully to the system of record before the next voter casts their ballot.
SW-7830	ClearCast	Fixed an issue in which a ClearCast station which had polls opened and closed without any ballots being cast would raise an error message when trying to merge the results into ClearCount.
SW-7750	ClearCast	The election_state.txt file on the USB drives are now moved into the current election folder when the election is closed on the ClearCast station, rather than deleted.
SW-7730	ClearCast	ClearCast election logs that are written in plain text on the USB drives are hashed to secure them against tampering.
SW-7681	ClearCast	New values have been added to the election-state.txt file due to the new results aggregation workflow. These are: scan_computer_name, scanner_model, and scanner_serial.
SW-7660	ClearCast	The workflow for aggregating ClearCast results has changed in this release. When merging results, you now insert the USB drives from ClearCast into a CountStation laptop rather than a CountServer and use the Results Uploader application to merge the results into ClearCount. For further details, refer to the ClearCount Election Administration Guide.
SW-7531	ClearCast	Fixed an issue where changing the language while an error is displayed on the UI can cause a different error to display in the chosen language.
SW-7420	ClearCast	The election-sigs.txt file has been restructured so there is only one file with this name for each election, and it does not include either the poll worker or election code. The election-sigs.txt file in the election directory should have an "election" key with a hash value (this is the hash of the election.log file). The voting-sigs.txt file in the voting directory should have an "archive.tar" key with a hash if ballots have been scanned.
SW-6687	ClearCast	The ClearCast functionality that recovers from an election in progress on a USB drive has changed so that it reads the encrypted Cast Vote Records on the USB drive instead of retabulating the ballot images. The images and CVRs are validated to ensure that they have not been tampered with.
SW-8251	ClearCast	During log in and after removable drives have been reinserted, ClearCast now validates all data on each affected drive before allowing the user to proceed.
SW-8252	ClearCast	Validation can now be done between each of the data sources used in the election any time after the polls have been opened.
SW-8266	ClearCast	The Election Management page which offers the option to recover from a USB drive has a new design that features a table that displays details about the data on each drive that enable the user to make a decision about what drive to recover from. Action buttons are available to select a USB drive to recover from or the internal drive if you want to clear the election instead of recovering.

Table B-1. System Modifications *(continued)*

Issue key	Component	Change Note Description
SW-7969	ClearCast	Added buttons to lower right menu that say mount/unmount for all of the 'main' screens. Tapping unmount is recommended to ensure that the data on the USB drives is saved properly before removing the drives from the voting station. Added buttons to polls closed screen that prompts the user to unmount the USB drives. Added a screen after unmounting is done prompting the user to shut down.
SW-7973	ClearCast	An explicit "Unmount" option has been added to the ClearCast UI which enables a user to safely remove the USB drives from the voting station. As a result, USB drives that have been unmounted are no longer automatically mounted when they are detected to be present, but are mounted after a successful login.
SW-8517	ClearCast	ClearCast no longer loads elections with BDFs from older versions of ClearVote (that is, BDFs with a BDF version older than the version that is output by ClearDesign in the current release).
SW-8109	ClearCast	ClearCast reports now include breakdowns by ballot and card (for multi-card ballot elections) and breakdown by party (for closed primary elections).
SW-6548	ClearCast	During Vote Center and Counter Group selection, ClearCast now allows the user to filter by Vote Center Category.
SW-8377	ClearCast	Unencrypted BDF files are no longer supported in ClearCast. The ballot definition file must be exported from ClearDesign as an encrypted BDFx.
SW-8673	ClearCast	The image displayed during ballot scanning is now static/non-animated.
SW-8094	ClearCast	The verbiage on the ClearCast UI related to battery charging state has been updated.
SW-8108	ClearCast	ClearCast now tracks and displays information about ballots cast as well as cards cast. Previously, it was stated the number of cards cast or cards accepted in the UI. A new number is now displayed with the label "ballots cast" which indicates the number of ballots accepted by the voting station. The number of ballots corresponds to the number of "Card 1"s accepted by the voting station. This also has a change for ClearDesign. ClearDesign had in it a languages option for Cards Cast that was called BallotsAccepted. A new languages option was introduced called CardsAccepted The new verbiage for each is: CardsAccepted: Cards Accepted: BallotsAccepted: Ballots Accepted:
SW-7981	ClearCast	The "Save System Information" option available to the maintenance user now saves OS level logs useful for debugging in addition to the ClearCast System Log.
SW-8768	ClearCast	Recovering in the middle of L & A testing without ending the test allows you to enter the same session for L & A testing.
SW-8292	ClearCast	The printed ClearCast election log now includes a column indicating whether the entry was validated or not with each entry printed.

Table B-1. System Modifications *(continued)*

Issue key	Component	Change Note Description
SW-7005	ClearCast	The color of the "Submit" and "Return" buttons when giving voters a choice for a ballot that has tabulated with a warning (for example, if the voter has submitted an overvote) are now both the same neutral color rather than green and red.
SW-9103	ClearCast	There is a new loading bar that appears when the user clicks save system info if saving the system info process takes more than a couple seconds to do.
SW-9231	ClearCast	Recovering L&A Results now leaves the results zeroed out with a blank database, but it still reloads and recovers the election (bdf) itself.
SW-7419	ClearCast	The election-state.txt file that is written on the removable USB drives of ClearCast no longer contains the pollworker_code or election_code.
SW-6676	ClearCast	The Precinct Card Counts report was previously limited to 100 precincts. This limit has been removed, so this report can be printed for elections and vote centers with large numbers of precincts.
SW-7536	ClearCast	Graphics depicting hardware are automatically chosen upon install to accurately reflect the version onto which the software is installed.
SW-9195	ClearCast	The label for displaying the summary report during logic and accuracy testing changes to "Display Zero Report" depending on whether cards have been cast.
		ClearCount
SW-8923	ClearCount	Fix potential 'deadlock' error that could happen if a delete box was run at the same time as a manually adjudicated ballot was being saved. This could lead to 'box already copied' errors when re-scanning the deleted box.
SW-8730	ClearCount	There is no longer an option to disable TLS when installing ClearCount.
SW-8625	ClearCount	Fixed an issue that prevented the concurrent upload of multiple sets of results to ClearCount from multiple CountStations. This was accomplished by building apache2 from source and inserting a third party patch that addresses an apache issue.
SW-8581	ClearCount	The Results Uploader application communicates with ClearCount using ECC keys for TLS.
SW-8550	ClearCount	Updated the digital certificate algorithm from the RSA to ECC.
SW-8548	ClearCount	This release validates that all cryptographic functions us the FIPS certified cryptographic library.
SW-8329	ClearCount	In previous version, the registration count on the PDF reports for an election, precinct, or district did not include the counts for parties that did not have their own ballot, nor did it include the counts for contests that were not on the first card of the ballot.
SW-8287	ClearCount	Make sure Change Notes include that we now support Bitlocker being enabled during installation.
SW-8272	ClearCount	Ensure all cryptographic functions, including simple hashes, use the FIPS validated library.
SW-8145	ClearCount	Disable super user (su) access to the mysql server unless the mysql user password is entered.
SW-7932	ClearCount	A new column was added to the table for viewing ClearCount logs which show whether logs merged from ClearCast results are valid or not titled "Invalid HMAC"

Table B-1. System Modifications *(continued)*

Issue key	Component	Change Note Description
SW-7818	ClearCount	Status messages display in the Results Uploader application to inform the user of the status of an upload and provide troubleshooting information. For further details, refer to the ClearCount Election Administration Guide.
SW-7732	ClearCount	ClearCast election logs are now merged into ClearCount based on the text files that are continuously written to the USB drives during operation, rather than from a database backup taken at polls close. The logs are hashed to secure them against tampering, and these hashes are verified before merging the logs into ClearCount.
SW-7616	ClearCount	Previously, using the Back button in Google Chrome on the PDF Reporting page resulted some user selections getting ignored. This issue no longer occurs.
SW-7559	ClearCount	Previously, the ClearCount install displayed the following message: "error: attempt to read or write outside of disk 'hd0'. Entering rescue mode...grub rescue>." This error no longer occurs.
SW-7543	ClearCount	ClearCount no longer fills in password on non-login screens.
SW-7465	ClearCount	The ballot definition file (BDF) now contains the table ballotgroupmap.csv. This table maps a VoterGroupID to a VoterCenterID.
SW-7449	ClearCount	ClearCount validates that data the that is uploaded from USB drives using the Results Uploader application is valid, well-formed, and has not been tampered with before it merges the results into the database.
SW-7439	ClearCount	The Results Uploader application checks that the contents of the USB drives contain valid election results for the current election that is active in ClearCount and for which results uploads have been enabled before attempting to upload them to the CountServer.
SW-7368	ClearCount	The election administrator is able to toggle on the uploading of ClearCast results for the active election. If this option is not enabled, results cannot be uploaded from CountStations.
SW-7316	ClearCount	Additional log entries have been added to ClearCount logs for events that occur while merging results using the Results Uploader application.
SW-7276	ClearCount	A new command-line option enables administrators to regenerate a new digital certificate for the ClearCount servers without reinstalling the software.
SW-7275	ClearCount	Previously the digital certificate generated on installation had a lifetime of 7305 days. It now has a lifetime of 365 days and there is an additional script to allow users to re-generate the digital certificate without re-installation.
SW-8350	ClearCount	This replaces the usage of aptitude to get third party dependencies for the About Page with dpkg-query.
SW-7188	ClearCount	This release has added the Election Date element to the XML file format.
SW-6694	ClearCount	ClearCast results can be uploaded and merged from USB drives based on files that are continuously written to the drives during the voting session rather than based on a database backup taken when closing polls. This results in a faster poll-closing process as well as eliminating errors when results are uploaded to ClearCount without polls having been first been closed in ClearCast.
SW-4432	ClearCount	The hover found on the vote visualization screen now correctly shows angle brackets in any strings "<" ">".

Table B-1. System Modifications *(continued)*

Issue key	Component	Change Note Description
SW-8376	ClearCount	Previously, the certain fields in the metadata.csv file were not required to create an election in ClearCount. Now, if JurisdictionName, ElectionName, ElectionDate, or Parse are left empty, the election will not be created and an error is thrown.
SW-8285	ClearCount	To be consistent with ClearCount, ClearDesign now enforces that Counter Group abbreviations consist of only uppercase letters (A-Z) and numbers (0-9).
SW-8491	ClearCount	On the ClearCount Election Administration page, it is possible to show the Election Key Id included in an encrypted BDFx. This can be used to compare with the version in the BDFx loaded into ClearCast.
SW-1900	ClearCount	Previously election- and web-log pages had date filters that defaulted to the current day. They are now date-time filters that default to the last 2 hours. Filters for Severity, Source, and Machine were also added.
SW-8147	ClearCount	The PDF "Ballots by Geography" report now has options to get totals by "Party" and by "Card Sequence", where "Card Sequence" is the 1st, 2nd, 3rd, etc. card of a ballot.
SW-8298	ClearCount	The ClearCount Election Results XML file now contains a breakdown of ballots cast in each precinct per party.
SW-8449	ClearCount	The APL now includes the 5511 Dell Latitude.
SW-7552	ClearCount	This moves the fields PollOpenReportCopies and PollCloseReportCopies from the metadata table to the vote centers table to support the corresponding changes in the BDF format
SW-8772	ClearCount	The version of Ubuntu has been upgraded to 18.04.5.
SW-6777	ClearCount	The less CSSÂ library has been removed from ClearCount.
SW-7880	ClearCount	The election password is always required for merging ClearCast results into ClearCount. BDFs used in ClearCount must always be encrypted. As a result, error messages for the case where ClearCast results were merged without entering a password are no longer applicable and have been removed.
SW-8792	ClearCount	When doing "Safely merge updatable BDF content" into an existing election, all election metadata fields except Parser and StraightPartyType from the BDF are now merged into the existing election.
SW-8831	ClearCount	On the Election Administration page, for elections that are not already upgraded to the current database version of ClearCount, an "Upgrade Election" action will be present on the action menu in place of actions that modify the election database.
SW-8635	ClearCount	The term "ScanServer" has been changed to "CountServer" consistently throughout the product, including the server default host name, and in user interface strings.
SW-9276	ClearCount	This fixes a bug where the "Redact Small Vote Subtotals" and "Encryption Key Id" columns were shown by default in the Election Administration web page. It was intended that these columns be hidden by default, but available to be toggled on via Show/hide columns.
SW-8056	ClearCount	When the ClearCount digital certificate will expire within 60 days, a warning is displayed on the ClearCount login screen.

Table B-1. System Modifications *(continued)*

Issue key	Component	Change Note Description
SW-9001	ClearCount	The election administrator has the option to merge election results (Cast Vote Records) from ClearCast voting stations without uploading the images at the same time in order to expedite the results aggregation and reporting process. Selecting this option displays a confirmation dialogue with information about which features of ClearCount will not be usable without ballot images.
SW-7851	ClearCount	Tabulation of ballots between 8 and 9 inches in length failed due to a missing library, resulting in an exception.
SW-8340	ClearCount	The hardening script has been updated to disable the "Windows Defender notification icon" startup application, which is not a whitelisted application.
SW-7629	ClearCount	Improve the performance for searching for backup files.
SW-8218	ClearCount	Updates copyright on election dashboard
SW-6607	ClearCount	You can now manually set a Precinct to be "Reported" on the Precincts Web Report. This is useful when no ballots have been cast in a precinct, as automatic tracking of precincts reported depends on ballots cast in Counter Groups that are marked as Reporting.
SW-6134	ClearCount	When using Fujitsu scanners, you will now use PaperStream Capture to scan ballots instead of ScandAll Pro. ClearCount scripts have been updated for this change, and a PaperStream Capture profile has replaced the ScandAll Pro profiles.
SW-7814	ClearCount	Previously, when creating a PDF report, selecting "Hide Counter Group subtotals" would remove information about counter group filters from the header of the generated PDF. Information about counter group filters will now continue to be shown when "Hide Counter Group subtotals" has been selected.
SW-7138	ClearCount	ClearCount PDF reports now show the number of precincts reporting at the contest level.
SW-6133	ClearCount	The new PaperStream Capture profile contains a scanner driver profile that allows you to use imprinting and endorsing, if your scanner has that functionality.
SW-7834	ClearCount	The BDF now has a field for "WriteInReportFormat" within the vote centers table, which may be used by ClearCast in the future to decide if Write-ins with text but no marked oval are included in the Write-in report. This field will also display in ClearDesign VoteCenterCategory Reports, as generated from the election home page.
SW-7608	ClearCount	Improve the performance of checking backup drives for existing election backup.
SW-7591	ClearCount	The Counter Group report now indicates which precincts show as reporting.
SW-7553	ClearCount	This release makes vote center data available to ClearCast.
SW-8902	ClearCount	For closed primary elections that may have some splits that do not have a ballot for a specific party provide the option to allow the reporting of those number in the SOCC report. Also include those counts in the XML export.
SW-8623	ClearCount	This version has added the "Party Name" field to the Card Style report that shows the party associated with the ballot.
SW-6706	ClearCount	When a user saves a card in the Card Resolutions tool and no ovals have changed, ClearCount displays a message. This message has changed.

Table B-1. System Modifications *(continued)*

Issue key	Component	Change Note Description
SW-6292	ClearCount	For straight-party contests, the user can to set the Straight Party Voting contest to show ovals for ONLY those parties for which there are candidates on that ballot. This feature is called conditional straight party voting (SPV). • Reports correctly list the vote totals by style for straight-party contests. Reports indicate that a party does not have an oval by showing 0 votes for that party. • The Card Resolutions tool no longer allows users to show parties that do not have party ovals on a particular ballot style. • The XML output reflects these changes. If a style or geography does not have a vote oval for a party, the XML indicates 0 votes for that party.
SW-6716	ClearCount	Allow manually resolved ovals to show on the Vote Visualization page. Users can now toggle between showing automatically adjudicated ovals, manually adjudicated ovals, or both.
SW-6717	ClearCount	Allow manually resolved ovals to show on the Vote Visualization page. A border with a dashed line indicates a manually resolved oval.
SW-6359 SW-3663	ClearCount	In the Cards Resolution tool, visual indicators enable users to differentiate between implicit and explicit votes in the Card Resolutions tool and Vote Visualization tool. This change affects both primary preference and straight-party contests.
SW-3250	ClearCount	When a user reopens a card in the Card Resolutions tool that was visually resolved as Multiple, the Card Resolutions tool shows how the card was resolved.
SW-6639	ClearCount	In the Cards Resolution tool, users can deselect an implicitly overridden choice.
SW-6372, SW-6373	ClearCount	For write-in name assignment, a new database table was added to support write-in names
SW-6956	ClearCount	For write-in name assignment, all contests with write-ins have a default ‘Invalid’ write-in name.
SW-6478	ClearCount	For write-in name assignment, this release implements a back end for the contests with write-ins filter.
SW-6370, SW-6374	ClearCount	For write-in name assignment, there is a new Contests with Write-ins report that lists all contests that have write-in candidates and the total number of write-ins, assigned write-ins, and unassigned write-ins. User access this page from the report menu.
SW-6886	ClearCount	For write-name assignment, there is a new Write-in Candidates by Contest report that lists all the write-in candidates, their number of assignments, and total votes.
SW-6935	ClearCount	The Election Log records when WIT candidate names are added, changed, deleted and when assignments are made.
SW-6907, SW-6973, SW-6957	ClearCount	There is a new Write-in Assignments tool that displays the write-ins and allows the user to assign the write-in to a write-in name. Users access this page by using the hyperlink values on the Contests with Write-ins report.
SW-2349	ClearCount	ClearCount no longer uses Flash. Menus that previously used Flash look different, but retain all previous options.

Table B-1. System Modifications *(continued)*

Issue key	Component	Change Note Description
SW-6576	ClearCount	ClearCount switched from the 'c' compile twain library to the pytwain library.
SW-6300	ClearCount	ClearCount no longer supports Firefox.
SW-6914	ClearCount	Unused precinct variables have been removed from the XML generation code.
SW-7437	ClearCount	This release has moved the option for exporting an XML file from the election dashboard page to the Election Administration page.
SW-7426	ClearCount	In the Election Administration area, this release now offers the option for customers to upload their own XSLT file and use that file to export custom results based on that XSLT format.
SW-7510	ClearCount	If you try to import an XSLT file without specifying a filename on the Election Administration area, ClearCount displays the following message: ERROR. No XSLT supplied.
SW-5420	ClearCount	Cast Vote Record (CVR) now uses the ChoiceName and no longer uses the ChoiceShortName.
SW-6121)	ClearCount	The browser versions shipped with ClearCount have been updated.
SW-3026	ClearCount	In Google Chrome, Print Table for long reports is now larger to improve readability.
SW-6137	ClearCount	In Google Chrome, the bottom line of drop-down list was previously missing in the Allow Display of Vote Totals dialog. This issue is fixed.
SW-6148	ClearCount	With single-row cross-endorsement, when the bottom choice in the Card Resolutions tool wrapped, the height of Contest Editor previously did not adjust correctly. This issue is fixed.
SW-9607	ClearCount	The Ubuntu sudo library has been upgraded to pick up security fix.
SW-9475	ClearCount	No code changes for this, It just updated the calls and history comments in the module headers
SW-9418	ClearCount	Update system configuration for changes in SCAP checklist from CIS Ubuntu 18.04 Version 1.0.0 to Version 2.0.1
ClearDesign		
SW-8810	ClearDesign	If a split has multiple districts within the same district category, a more informative error message will be displayed when exporting the BDF. It will cite which district category has the issue with which split so that it can be fixed by the user.
SW-8789	ClearDesign	This fixes a layout bug that caused the oval box to sometimes obscure the contest border below the oval.
SW-8776	ClearDesign	This fixes a bug where Write-in choice styles set at the general layout level were not respected.
SW-8711	ClearDesign	This fixes a bug were sometimes the border around candidate names would have breaks caused by the overlay of the oval vote box.
SW-8619	ClearDesign	In previous versions if all the contests endorsed by one party were also the same set of contests that were endorsed by other parties ballots where generated only for the first party. This did not cause any issue with tabulating ballots but the voter registration counts where only included for the first party.
SW-8538	ClearDesign	Ensure FIPS mode is always on for OpenSSL.

Table B-1. System Modifications *(continued)*

Issue key	Component	Change Note Description
SW-8535	ClearDesign	Set Apache2 web server to run in FIPS mode.
SW-8456	ClearDesign	This fixes a bug with the VoterGroups with VoteCounts ClearDesign report, where the total sum of VoterCounts always displayed as 0.
SW-8454	ClearDesign	This fixes a bug impacting the vertical spacing of VoterGroup (Party) names in the case of the VoterGroup placement being below the Choice (Candidate) name.
SW-8392	ClearDesign	This replaces the usage of aptitude to get third party dependencies for the About Page with dpkg-query.
SW-8344	ClearDesign	In previous releases the search function in the list views incorrectly included the first column 'Action' in the searched columns. This resulted in all rows being included when searching (filtering) for 'delete', or 'primary'. This has been corrected in this release.
SW-8342	ClearDesign	In previous releases, the tooltip for the disabled "Delete" buttons in the list views only displayed the word "Election" when the election state was set to disable the button, eg the election state was set to Media Created.
SW-8274	ClearDesign	Ensure all cryptographic functions are using the FIPS compliant libraries.
SW-8034	ClearDesign	Fix issue with some CSV reports not formatting correctly.
SW-7893	ClearDesign	Increase the encryption key, used to encrypt the election data, size from 128 bits to 256 bits
SW-7569	ClearDesign	Errors no longer occur when you generate or reset ballots within a vote center category.
SW-7565	ClearDesign	When the precinct name and the split name are the same, only the precinct name displays on the ballot. An empty set of brackets no longer appears.
SW-7542	ClearDesign	ClearDesign no longer fills in the passwords on non-login screens.
SW-7376	ClearDesign	ClearDesign has improved the restore time and logging for election backups where ballots have been laid out several times.
SW-7348	ClearDesign	Previously, contests failed to spill over to the next column if their specified columns ran out of room.
SW-7341	ClearDesign	Previously, the layout functionality timed out without a warning message when a contest could not fit on the ballot. ClearDesign version 2.2 has resolved this issue. When the layout functionality cannot fit a contest on a ballot, ClearDesign now issues a warning message similar to the following example: "Error: Failed to layout card -Failed to fit contest Question 26-125 on card seq 2 side 1. The card is not long enough."
SW-7312	ClearDesign	Previously, a ClearDesign user could not delete a split if track voter registration was selected for voter groups. This issue no longer occurs.
SW-7273	ClearDesign	A command-line option allows you to regenerate the digital certificate for the ClearDesign server without reinstalling the software.
SW-7274	ClearDesign	Browsers are starting to enforce a maximum valid time for digital certificates to less than 825 days (27 months). We have shortened the validity time of our certificates to meet this requirement.
SW-7210	ClearDesign	Previously, the record count appeared as 0 when you cleared the election logs in ClearDesign. ClearDesign now displays the correct record count.
SW-8587	ClearDesign	The regvoters.csv file in the BDF has been modified to include the BallotSetID field.

Table B-1. System Modifications *(continued)*

Issue key	Component	Change Note Description
SW-8547	ClearDesign	Update the build procedures to include building of OpenSSL version 1.0.2n, rather than 1.0.2g, in FIPS mode.
SW-8660	ClearDesign	The default value of "Combine Similar Ballots" in BallotSet has been changed from True to False.
SW-6544	ClearDesign	The ballot definition file contains a new table called votecentermap.csv. This table associates vote centers with counter groups.
SW-8291	ClearDesign	Previously, the Straight Party Contest name in the Localizations tab was abbreviated to Spty or Sprty. Anywhere this abbreviation existed now spells out Straight Party fully.
SW-8409	ClearDesign	Ensure Apache2 web server is compiled and running in FIPS mode.
SW-7362	ClearDesign	Add support for Colored Backgrounds in Card Headers based on a Conditional Value.
SW-8440	ClearDesign	In the configuration files for BDFx and ADFx, a truncated hash, in hex, of the election key that is used for authentication (HMACS) is included so that users can determine if the key matches between ClearCast and ClearCount.
SW-7533	ClearDesign	The ClearCast automatic printing of reports at the opening of polls can now be set in ClearDesign by vote center by editing the specific vote center. The option is no longer available by device type as was previously available.
SW-8636	ClearDesign	Previously, a user could add a backup and export an ADFx/BDFx with an empty jurisdiction_name field. Now, if any of these actions are attempted with the empty field, it will error and the action will not be completed.
SW-8053	ClearDesign	There is now a "Choice: Label" entity style in the layout styles dialog.
SW-8773	ClearDesign	Upgrade from Ubuntu 18.04.1 to 18.04.5
SW-8005	ClearDesign	This fixes the issue where the system would stop responding when backing up an election that had large tables and insufficient memory.
SW-7397	ClearDesign	Adds a script that allows a user to easily generate a digital certificate.
SW-7742	ClearDesign	Correct the issue with all bottom card stubs being reduced in height to account for the printer margin rather than just the last bottom margin. This only happens when there is more than one bottom margin.
SW-8532	ClearDesign	In previous releases we used a 16 byte encryption key. This updates the key for older elections to 32 bytes when exporting the BDF.
SW-8217	ClearDesign	Updates copyright dates on the about page, the page footer, and the javascript files.
SW-7737	ClearDesign	Allow the request for /favicon.ico, the url requested by browsers for the site icon, to be handled without the need to have logged in.
SW-7845	ClearDesign	Add support to the system to allow the text for all of the languages to be placed on one ballot rather than on separate ballots.
SW-8021	ClearDesign	When the ClearDesign digital certificate will expire within 60 days, a warning is displayed on the ClearDesign login screen.
SW-7842	ClearDesign	Update the database and UI to support the option to place the text for all the languages on one ballot.
SW-7954	ClearDesign	When creating a new election, you can import data in the DIMS format used in Ohio.
SW-8062	ClearDesign	When printing ballot sets, you can choose to have the filenames start with the precinct name instead of the card style name.

Table B-1. System Modifications *(continued)*

Issue key	Component	Change Note Description
SW-8041	ClearDesign	Update OpenSSL from version 1.0.2g to version 1.0.2u.
SW-7843	ClearDesign	Update the ADF file format to support text for all languages on ballot option.
SW-7854	ClearDesign	To support reporting of voter counts for parties that do not have a specific card in a precinct, have add the PartyID to the regvoters.csv file in the BDF and the included the counts for those parties.
SW-6553	ClearDesign	The string "::Preview::" has changed to "Report" in the margin headers when printing reports.
SW-6797	ClearDesign	ClearDesign now invalidates card layouts when the controlling Straight Party contest changes.
SW-6210	ClearDesign	The controlling contest for straight-party voting now displays only the parties of candidates which appear on that individual ballot.
SW-6439	ClearDesign	This release introduces a function that backs up and then clears the election logs.
SW-7115	ClearDesign	ClearDesign truncates all empty tables when importing data to reset the IDs.
SW-6515	ClearDesign	Update jszip from version 3.1.2 to version 3.2.1 or higher.
SW-6516	ClearDesign	Update papaparse from version 4.1.2 to version 4.6 or higher.
SW-6510	ClearDesign	Update jquery from version 1.10 to version 2.2.4.
SW-6511	ClearDesign	Update jquery-impromptu from version 5.2.3 to version 6.2.3 or higher.
SW-6509	ClearDesign	Update fonttools from version 3.00 to version 3.41.0 or higher.
SW-6512	ClearDesign	Update jquery-splitter from version 0.14.0 to version 0.27.1 or higher.
SW-6513	ClearDesign	Update jquery-ui from version 1.10.4 to version 1.12.1 or higher.
SW-6507	ClearDesign	Update SqlAlchemy from version 1.0.15 to version 1.3.3 or higher.
SW-6509	ClearDesign	Upldate xlrd from version 0.9.4 to version 1.2.0 or higher.
SW-6506	ClearDesign	Update DBUtils from version 1.1 to version 1.3 or higher.
SW-6980	ClearDesign	Add 'sqlalchemc.ext.baked to the hidden imports of the Pyinstaller config file.
SW-6855	ClearDesign	You can now directly change the value of the Straight Party Type field from Exclusive to One Touch. Previously, if the value of the Straight Party field was Exclusive, you had to change it to another value before changing it to One Touch.
SW-6794	ClearDesign	Bulleted and numbered lists in ballot elements, such as headers and contests, now appear the same on the screen and in print. Previously, lists appeared differently on the screen and in print.
SW-6440	ClearDesign	The entity styles for Choice: Candidates no longer override the entity styles for Voter Groups.
SW-6011	ClearDesign	The PrecinctReportingName and PrecinctName fields now export in the appropriate order in the ballot definition file (BDF).
SW-7034	ClearDesign	Cards now filter correctly by ballot set for vote centers when you create a BDF.
SW-7285	ClearDesign	ClearDesign has fixed the issue that prevented a user from changing a header type when the header was assigned to a specific ballot set.
SW-9608	ClearDesign	The Ubuntu sudo library has been upgraded to pick up security fix.
SW-9581	ClearDesign	The copyright date in the ClearDesign footer was updated to include 2021

Table B-1. System Modifications *(continued)*

Issue key	Component	Change Note Description
SW-9474	ClearDesign	No code changes for this, It just updated the calls and history comments in the module headers
SW-9417	ClearDesign	Update system configuration for changes in SCAP checklist from CIS Ubuntu 18.04 Version 1.0.0 to Version 2.0.1
ClearVote		
SW-8417	ClearVote	The Windows ED 20-02 security patch is included in Denali installation directions.