United States Election Assistance Commission

Certificate of Conformance

Clear Ballot ClearVote 2.3

VVSG 2005 VER. I

EAC CERTIFIED

The voting system identified on this certificate has been evaluated at an accredited voting system testing laboratory for conformance to the *Voluntary Voting System Guidelines Version 1.0 (VVSG 1.0)* . Components evaluated for this certification are detailed in the attached Scope of Certification document. This certificate applies only to the specific version and release of the product in its evaluated configuration. The evaluation has been verified by the EAC in accordance with the provisions of the EAC *Voting System Testing and Certification Program Manual* and the conclusions of the testing laboratory in the test report are consistent with the evidence adduced. This certificate is not an endorsement of the product by any agency of the U.S. Government and no warranty of the product is either expressed or implied.

Product Name: ClearVote

Model or Version: 2.3

Name of VSTL: Pro V&V

EAC Certification Number: CBG-CV-23

Date Issued: 10/31/2022

Executive Director

Scope of Certification Attached

Scope of Certification

Revisions

Version	Date	Description(s)
1.0	10/31/22	Initial Release
1.1	06/11/24	Updated COTS hardware component for ClearAccess from EPS15E3 to EPS15E2.
1.2	07/02/25	Added revision history table. Added modification overview and modification details. Updated components list to reflect correct versions used in certified configuration.

Scope Purpose

This document describes the scope of the validation and certification of the system defined above. Any use, configuration changes, revision changes, additions or subtractions from the described system are not included in this evaluation.

Significance of EAC Certification

An EAC certification is an official recognition that a voting system (in a specific configuration or configurations) has been tested to and has met an identified set of Federal voting system standards. An EAC certification is **not**:

- An endorsement of a Manufacturer, voting system, or any of the system's components.
- A Federal warranty of the voting system or any of its components.
- A determination that a voting system, when fielded, will be operated in a manner that meets all HAVA requirements.
- A substitute for State or local certification and testing.
- A determination that the system is ready for use in an election.
- A determination that any particular component of a certified system is itself certified for use outside the certified configuration.

Representation of EAC Certification

Manufacturers may not represent or imply that a voting system is certified unless it has received a Certificate of Conformance for that system. Statements regarding EAC certification in brochures, on Web sites, on displays, and in advertising/sales literature must be made solely in reference to specific systems. Any action by a Manufacturer to suggest EAC endorsement of its

product or organization is strictly prohibited and may result in a Manufacturer's suspension or other action pursuant to Federal civil and criminal law.

System Overview

ClearVote 2.3 is a modification of ClearVote 2.2, a previously certified system. ClearVote 2.3 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).

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, ballot production, and generation of voting machine election definition file packages. The ClearDesign system consists of the physical components listed below. All the components 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 Microsoft Windows used to connect to the DesignServer. A browser-based interface is used to perform the necessary tasks. A user with administration privileges is 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 Microsoft 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 components are unmodified COTS that are connected via a wired, closed, and isolated network not connected to any other systems or the Internet.

- CountServer: An Ubuntu Linux 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 and CountStations to the CountServer using a wired, closed Ethernet-based network.
- CountStation: 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 vote totals and ballot images from the ClearCast precinct tabulator. 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 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 application is stored on the CountServer, and an instance of Tabulator runs on each ScanStation. The Tabulator counts ballots and adjudicates the vote for ballots scanned on that ScanStation. Upon completion of a scanned 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.

ClearCast 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, which 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.

Modification Overview

The modifications for the ClearVote 2.3 System consist of both software and hardware changes. Software changes and updates were implemented to accommodate defect resolutions, enhancements, and user interface features. Hardware modifications include the addition of a Dell Latitude 5521 computer to ClearDesign as a DesignStation and to ClearCount as a CountStation and a ScanStation. Additionally, the Lexmark MS521dn printer and the APC SRT1500RMXLA UPS have been added to the ClearAccess eloPos box configuration.

The submitted modifications include the following changes from version 2.2 to 2.3:

ClearDesign

- SW-2689: Implemented three new contest rotation methods, Grouped Precinct Rotation, Voter Count Precinct Rotation, and Balance Precinct Rotation.
- SW-9451: Added new macros for 'pageNum' and 'numPages'.
- SW-10161: Added support for more card footer placement options. For more details, refer to the ClearDesign User Guide.
- SW-10690: Updated the accessible definition file (ADF) to account for the new page number macros introduced in this release.
- SW-10932: Enabled the DesignServer to be accessed by name on the local network by allowing updating the Samba configuration.
- Added Dell Latitude 5521 computer as a DesignStation.

ClearAccess

- SW-11059: Updated Zebra CoreScanner driver to version 3.07.0011.
- Added Lexmark MS521dn printer added to eloPos box configuration.
- Added APC SRT1500RMXLA uninterruptible power supply added to eloPos box configuration.

ClearCount

- SW-8116: Changed the Apache configuration to set the maximum number of processes to start based on the number of CPU's installed on the server.
- SW-9151: In ClearCount when looking at Statement of Votes Cast reports, the user is now able to select the Choice Order column, to order the rows by the order of the choices how they would be on the ballot.
- SW-9437: A file ending in extension .co.csv that implements a variation on the Cast Vote Record format designed for Colorado has been added to the Cast Vote Record zip file package.
- SW-9439: In previous versions when getting the list of card images (thumbs) filtering by more than one contest the set only contained cards that had both contests on them. Now the set contains the cards that have either of the contests on them.
- SW-9553: Partitioned the results tables in the database to provide better performance on large elections (> 500,000 ballots).
- SW-9558: Updated the database index to improve speed of getting ovals to list on the oval visualization page. Performance improvement on large (>500,000 ballots) database is approximately 10x.

- SW-9604: Optimized the query used to generate the list of card images to display.
- SW-9641: Performance enhancements for the saving of ballots on the CountServer while scanning.
- SW-9648: Explicitly updated the votes and contest voted tables rather than using database triggers.
- SW-9712: The default log filter was setting an end date/time value that was preventing log messages from within the last minute from showing up. This has been fixed.
- SW-9713: The oval visualization page has been rewritten for performance reasons to support lazy loading of oval images. Oval images will be loaded as they are scrolled into view.
- SW-9795: Hourly cron job open/close log entries have been omitted to avoid filling the logs with expected messages.
- SW-9804: Table data for web statement reports is now passed as JSON to DataTables. This drastically improves client-side rendering for tables with a large amount of data (rows).
- SW-9816: The end date for logs now is unset by default, meaning that all log entries after the start date will be returned. In order for an end date/time to be persisted, it must be selected, and the "Change" button pressed.
- SW-9861: Fixed the issue in the resolver when a card's precinct or style is changed and then saved without selecting the 'vote' button.
- SW-9877: Fixed potential dead lock when error occurs during uploading of ClearCast results.
- SW-9910: Table data for the Card Resolutions page is now passed as JSON to DataTables. This drastically improves client-side rendering for tables with a large amount of data (rows).
- SW-9911: Fixed a bug in the "Show All" option under "Show / hide columns" on web reports. Previously a column that was intended to always be hidden would be displayed.
- SW-10178: Corrected the syntax for increasing the system log rate limit burst to the new configuration syntax.
- SW-10288: Fixed an issue that caused target cards to be erroneously categorized as unreadable ballots.
- SW-10517: Improved the performance for the Vote Visualization page when using large elections.
- SW-10718: Increased the number of allowable open files for MySQL to accommodate the partitioned tables.
- SW-10867: Enabled the CountServer to be accessed by name on the local network by allowing updating the Samba configuration.
- Added Dell Latitude 5521 computer as a CountStation and a ScanStation
- SW-13178: Updated the permissions that had been set on an installation directory, which prevented the system from calculating the hashes that could be used to verify the installation of the trusted build.

Mark Definitions

Twenty percent or more of the voter target (oval) marked anywhere within the oval (left/right, above, or below its center) provides mark recognition. The manufacturer recommends black ink, but many colors will tally in accordance with VVSG 1.0 accuracy requirements. There are no required dropout colors.

Tested Marking Devices

The manufacturer recommends black ballpoint pens, felt tip pens, gel pens, Sharpie® markers, and number 2 pencils.

Language Capability

In addition to English, the voting system supports Chinese, Danish, Dutch, Flemish, French, German, Italian, Japanese, Korean, Norwegian, Portuguese, Spanish, Swedish and Vietnamese.

Components Included

This section provides information describing the components and revision level of the primary components included in this Certification.

System Component	Software or Firmware Version	Hardware Version	Operating System or COTS	Comment
ClearAccess software	2.3.0			ClearAccess
ClearCast software	2.2.9			ClearCast
ClearCast Go software	2.2.a			ClearCast Go
ClearCount software	2.3.1			ClearCount
ClearDesign software	2.3.0			ClearDesign
EloPOS driver pack	2019.12.5		COTS software	ClearAccess
Google Chrome	87.0.4280.141		COTS software	ClearAccess
jquery	1.10.2		COTS software	ClearAccess
jsmin	2019.10.30		COTS software	ClearAccess
LGPO	3		COTS software	ClearAccess

System Component	Software or Firmware Version	Hardware Version	Operating System or COTS	Comment
nsis	3.01		COTS software	ClearAccess
DataTables	1.10.16		COTS software	ClearAccess
pefile	2018.8.8		COTS software	ClearAccess
PyInstaller	3.2		COTS software	ClearAccess
Pyserial	3.2.1		COTS software	ClearAccess
Python	2.7.10		COTS software	ClearAccess
Python-future	0.15.2		COTS software	ClearAccess
pywin	223		COTS software	ClearAccess
webpy	0.38		COTS software	ClearAccess
Zebra CoreScanner Driver	3.07.0004		COTS software	ClearAccess
Windows 10 Pro	Build 1607		Windows 10 Pro	ClearAccess
DataTables	1.10.16		COTS software	ClearCast
chromium-browser	92.0.4515.159		COTS software	ClearCast
jquery	1.12.4		COTS software	ClearCast
jQuery.NumPad	1.4		COTS software	ClearCast
jquery.ui	1.11.3		COTS software	ClearCast
JTSage DateBox	4.0.0		COTS software	ClearCast
libScanAPI.a	2.0.0.0		COTS software	ClearCast
OpenSSL (standard)	1.0.2g		COTS software	ClearCast
OpenSSL - FIPS	2.0.10		COTS software	ClearCast
Pyinstaller	3.2.1		COTS software	ClearCast
Ubuntu	18.04.5		COTS software	ClearCast
boot_merger	1.31		COTS software	ClearCast Go
chromium-browser	92.0.4515.159		COTS software	ClearCast Go
DataTables	1.10.16		COTS software	ClearCast Go
jQuery	1.12.4		COTS software	ClearCast Go
jQuery.NumPad	1.4		COTS software	ClearCast Go
jquery.ui	1.11.3		COTS software	ClearCast Go
JTSage DateBox	4.0.0		COTS software	ClearCast Go
libScanAPI.a	1.0.0.1		COTS software	ClearCast Go
libssl	1.0_1.0.2n		COTS software	ClearCast Go
Linux kernel	5.4.52		COTS software	ClearCast Go
openssl	1.0.0_1.0.2n		COTS software	ClearCast Go
rk3399_bl31	1.35		COTS software	ClearCast Go
Rk3399_ddr-800MHz	1.25		COTS software	ClearCast Go

System Component	Software or Firmware Version	Hardware Version	Operating System or COTS	Comment
rk3399_loader	1.24.126		COTS software	ClearCast Go
Rk3399_miniloader	1.26		COTS software	ClearCast Go
rkdeveloptool	1.2		COTS software	ClearCast Go
trust_merger	1.0 (2015-06-15)		COTS software	ClearCast Go
U-boot	2020.1		COTS software	ClearCast Go
Ubuntu	18.04.6 LTS		COTS software	ClearCast Go
Apache	2.4.29-1		COTS software	ClearCount
auditd	2.8.2 - 1		COTS software	ClearCount
debconf	1.5.66		COTS software	ClearCount
Fujitsu fi-6400	PaperStream IP (TWAIN) 2.10.3		Windows 10 Pro	ClearCount
Fujitsu fi-6800	PaperStream IP (TWAIN) 2.10.3		Windows 10 Pro	ClearCount
Fujitsu fi-7180	PaperStream IP (TWAIN) 2.10.3		Windows 10 Pro	ClearCount
Fujitsu fi-7800	PaperStream IP (TWAIN) 2.10.3		Windows 10 Pro	ClearCount
Fujitsu fi-7900	PaperStream IP (TWAIN) 2.10.3		Windows 10 Pro	ClearCount
Google Chrome	87.0.4280.141		COTS software	ClearCount
J JavaScript jQuery-migrate library	1.2.1		COTS software	ClearCount
JavaScript Bootstrap library	2.3.2, & 4.3.1		COTS software	ClearCount
JavaScript bootstrap-vue library	2.0.2		COTS software	ClearCount
JavaScript Chosen library	1.8.7		COTS software	ClearCount
JavaScript DataTables Buttons	1.5.6		COTS software	ClearCount
JavaScript DataTables Buttons ColVis Library	1.0.8		COTS software	ClearCount
JavaScript DataTables Buttons html5 library	1.3.3		COTS software	ClearCount
JavaScript DataTables FixedHeader library	3.1.4		COTS software	ClearCount
JavaScript DataTables library	1.10.18		COTS software	ClearCount
JavaScript DataTables pdfmaker library	0.1.36		COTS software	ClearCount
JavaScript jQuery hotkeys library	0.8		COTS software	ClearCount
JavaScript jQuery library	1.10.2J		COTS software	ClearCount

System Component	Software or Firmware Version	Hardware Version	Operating System or COTS	Comment
JavaScript jQuery splliter library	0.28.3		COTS software	ClearCount
JavaScript jQuery tooltip library	1.3		COTS software	ClearCount
JavaScript vue library	2.6.10		COTS software	ClearCount
libapache2-mod-fcgid	2.3.9-1		COTS software	ClearCount
MySQLdb (part of Ubuntu)	5.7.37-0		COTS software	ClearCount
OpenSSL (standard)	1.1.1-1		COTS software	ClearCount
OpenSSL FIPS Object Module	2.0.10		COTS software	ClearCount
pmount	0.9.23 -3		COTS software	ClearCount
PollyReports	1.7.6		COTS software	ClearCount
PyInstaller	3.2.1		COTS software	ClearCount
Python (part of Ubuntu)	2.7.17-1		COTS software	ClearCount
Python-dateutil	2.8.1		COTS software	ClearCount
Samba	4.7.6		COTS software	ClearCount
Six	1.15.0		COTS software	ClearCount
sqlalchemy	1.3.4		COTS software	ClearCount
Ubuntu	18.04.5 LTS		COTS software	ClearCount
udisks	2.7.6-3		COTS software	ClearCount
Windows 10 Pro	Build 1607		Operating System	ClearCount
Apache	2.4.29		COTS software	ClearDesign
Bootstrap	3.0.0		COTS software	ClearDesign
DataTable	1.10.16		COTS software	ClearDesign
DataTable Buttons	1.4.2		COTS software	ClearDesign
DataTable Buttons JSZip	2.5.0		COTS software	ClearDesign
DataTable Buttons Pdfmake	0.1.32		COTS software	ClearDesign
DataTablePlugins	1.10.16		COTS software	ClearDesign
Google Chrome	87.0.4280.141		COTS software	ClearDesign
jquery	2.2.4		COTS software	ClearDesign
jquery-impromptu	6.2.3		COTS software	ClearDesign
jquery-qrcode	1		COTS software	ClearDesign
jquery-splitter	0.27.1		COTS software	ClearDesign
jquery-ui	1.12.1		COTS software	ClearDesign
jscolor	1.4.2		COTS software	ClearDesign
jslibmp3lame	0.5.0		COTS software	ClearDesign
jsmin	4.6		COTS software	ClearDesign

System Component	Software or Firmware Version	Hardware Version	Operating System or COTS	Comment
jszip	3.2.0		COTS software	ClearDesign
libapache2-mod-fcgid	2.3.9-1		COTS software	ClearDesign
MySQL	5.7.31		COTS software	ClearDesign
OpenSSL (standard)	1.1.1		COTS software	ClearDesign
OpenSSL FIPS Object Module	2.0.10		COTS software	ClearDesign
paparser	4.6.0		COTS software	ClearDesign
PhantomJS	1.9.8		COTS software	ClearDesign
Pyinstaller	3.2.1		COTS software	ClearDesign
Python	2.7.15		COTS software	ClearDesign
Python DBUtils	1.3		COTS software	ClearDesign
Python Flup	1.0.2		COTS software	ClearDesign
Python FontTools library	3.4.1		COTS software	ClearDesign
Python JSMIN	2.2.1		COTS software	ClearDesign
Python MySQL DB	1.3.10		COTS software	ClearDesign
Python Pillow	5.1.0		COTS software	ClearDesign
Python PIP	9.0.1		COTS software	ClearDesign
Python RTF	0.2.1		COTS software	ClearDesign
Python webpy	0.38		COTS software	ClearDesign
Python XLRD	1.2.0		COTS software	ClearDesign
Samba	4.7.6		COTS software	ClearDesign
SQLAlchemy	1.3.3		COTS software	ClearDesign
tinymce	4.1.9		COTS software	ClearDesign
Ubuntu	18.04.5		COTS software	ClearDesign
Unzip	6.0.21		COTS software	ClearDesign
Windows 10 Pro	Build 1607		Operating System	ClearDesign
Zip	3.0.11		COTS software	ClearDesign
ClearAccess Setup Case		ClearAccess Setup Case 2.3	COTS hardware	ClearAccess
ELO 15-inch EloPOS		EPS15E2	COTS hardware	ClearAccess
ELO 15-inch AIO		E-Series (ESY15E2)	COTS hardware	ClearAccess
Dell OptiPlex AIO		5250	COTS hardware	ClearAccess
ELO 20-inch AIO		X-Series (ESY20X2)	COTS hardware	ClearAccess
Dell Inspiron 15”		7573	COTS hardware	ClearAccess
Oki Data Laser Printer		B432dn	COTS hardware	ClearAccess
Lexmark Laser Printer		MS521dn	COTS hardware	ClearAccess

System Component	Software or Firmware Version	Hardware Version	Operating System or COTS	Comment
Zebra Technologies Bar Code Scanner		DS457-SR	COTS hardware	ClearAccess
Storm EZ Access Keypad		EZ08-22201	COTS hardware	ClearAccess
Storm EZ Access Keypad		EZ08-22000	COTS hardware	ClearAccess
Origin Instruments Sip/Puff Breeze with Headset		AC-0313-MUV, AC-0300-MU	COTS hardware	ClearAccess
Samson Over-Ear Stereo Headphones		SASR350	COTS hardware	ClearAccess
Monoprice Over the Ear Pro Headphones		8323	COTS hardware	ClearAccess
Hamilton Buhl Over-Ear Stereo Headphones		HA7	COTS hardware	ClearAccess
Ergotron Neo-Flex		Widescreen Lift Stand	COTS hardware	ClearAccess
Wearson LCD Stand		Adjustable LCD Monitor Stand	COTS hardware	ClearAccess
Corsair Flash Padlock 3 32 GB		Secure USB 3.0 Flash Drive	COTS hardware	ClearAccess
Corsair Flash Voyager GTX		3.1 USB Drive	COTS hardware	ClearAccess
Kingston Data Traveler Elite G2		3.0 USB Drive	COTS hardware	ClearAccess
SanDisk Extreme Go 64 GB USB		3.0 USB Drive	COTS hardware	ClearAccess
SanDisk Extreme Pro 64 GB USB		3.0 USB Drive	COTS hardware	ClearAccess
SanDisk Ultra Flair 32 GB USB		3.0 USB Drive	COTS hardware	ClearAccess
CyberPower Smart App UPS		PR1500RT2U	COTS hardware	ClearAccess
APC Smart-UPS		SRT1500RMXLA	COTS hardware	ClearAccess
ClearCast		Model D, Revision 4	COTS hardware	ClearCast
ClearCast Go		Model E Revision 5	COTS hardware	ClearCast
Corsair Flash Padlock 3 32 GB		Secure USB 3.0 Flash Drive	COTS hardware	ClearCast
Corsair Flash Voyager GTX		3.1 USB Drive	COTS hardware	ClearCast
Kingston Data Traveler Elite G2		3.0 USB Drive	COTS hardware	ClearCast
SanDisk Extreme Go 64 GB USB		3.0 USB Drive	COTS hardware	ClearCast
SanDisk Extreme Pro 64 GB USB		3.0 USB Drive	COTS hardware	ClearCast
SanDisk Ultra Flair 32 GB USB		3.0 USB Drive	COTS hardware	ClearCast

System Component	Software or Firmware Version	Hardware Version	Operating System or COTS	Comment
Ballot Bag		CV-1032-1.5, CV-1032-2.0	COTS hardware	ClearCast
Ballot Box		CV-1033-1.5, CV-1033-2.0	COTS hardware	ClearCast
Dell Precision Tower (Election Administration)		T3620	Windows 10 Pro	ClearCount
Lenovo ThinkServer (ScanServer)		TS140	Windows 10 Pro	ClearCount
Dell PowerEdge Server (ScanServer)		T130, T140, T330, T440	Ubuntu 18.04.5 LTS	ClearCount
Dell OptiPlex (Election Administration)		7440, XE3 SFF	Windows 10 Pro	ClearCount
Dell Latitude Laptop (ScanStation)		5580, 5590, 5500, 5511	Windows 10 Pro	ClearCount
Dell Latitude Laptop (CountStation)		5521	Windows 10 Pro	ClearCount
Fujitsu Scanner		fi-7180	COTS hardware	ClearCount
Fujitsu Scanner		fi-6800	COTS hardware	ClearCount
Fujitsu Scanner		fi-6400	COTS hardware	ClearCount
Fujitsu Scanner		fi-7800	COTS hardware	ClearCount
Fujitsu Scanner		fi-7900	COTS hardware	ClearCount
SanDisk Extreme Go 64 GB USB		3.0 USB Drive	COTS hardware	ClearCount
SanDisk Extreme Pro 64 GB USB		3.0 USB Drive	COTS hardware	ClearCount
SanDisk Ultra Flair 32 GB USB		3.0 USB Drive	COTS hardware	ClearCount
CyberPower Smart App UPS		PR1500RT2U	COTS hardware	ClearCount
Cisco 8-Port Switch		SG250-08	COTS hardware	ClearCount
Cisco Catalyst 8-Port Switch		C1000-8T-2G-L	COTS hardware	ClearCount
Cisco 24-Port Switch		C1000-24T-4X-L	COTS hardware	ClearCount
NetGear 8-Port Switch		FVS318G	COTS hardware	ClearCount
TP-LINK 4-Port Switch		TL-R600VPN	COTS hardware	ClearCount
Cisco 26-Port Switch		SG250-26	COTS hardware	ClearCount
TRENDNet 8-Port Switch		TEG-S80G	COTS hardware	ClearCount
Corsair Flash Padlock 3 32 GB		Secure USB 3.0 Flash Drive	COTS hardware	ClearCount
Corsair Flash Voyager GTX		3.1 USB Drive	COTS hardware	ClearCount
Kingston Data Traveler Elite G2		3.0 USB Drive	COTS hardware	ClearCount

System Component	Software or Firmware Version	Hardware Version	Operating System or COTS	Comment
APC Smart-UPS		SMT-1500C	COTS hardware	ClearCount
Dell Latitude Laptop (client)		5580, 5590, 5500, 5511	Windows 10 Pro	ClearDesign
Dell Precision Tower (client)		T3620	Windows 10 Pro	ClearDesign
Dell PowerEdge Server (server)		T130, T140, T440, R440, T630	Ubuntu 16.04.4 LTS	ClearDesign
Dell OptiPlex (client)		7440	Windows 10 Pro	ClearDesign
Cisco 8-Port Switch		SG250-08	COTS hardware	ClearDesign
Cisco Catalyst 8-Port Switch		C1000-8T-2G-L	COTS hardware	ClearDesign
NetGear 8-Port Switch		FVS318G	COTS hardware	ClearDesign
TP-LINK 4-Port Switch		TL-R600VPN	COTS hardware	ClearDesign
TRENDNet 8-Port Switch		TEG-S80G	COTS Hardware	ClearDesign
Corsair Flash Padlock 3 32 GB		Secure USB 3.0 Flash Drive	COTS hardware	ClearDesign
Corsair Flash Voyager GTX		3.1 USB Drive	COTS hardware	ClearDesign
Kingston Data Traveler Elite G2		3.0 USB Drive	COTS hardware	ClearDesign
SanDisk Extreme Go 64 GB USB		3.0 USB Drive	COTS hardware	ClearDesign
SanDisk Extreme Pro 64 GB USB		3.0 USB Drive	COTS hardware	ClearDesign
SanDisk Ultra Flair 32 GB USB		3.0 USB Drive	COTS hardware	ClearDesign

System Limitations

This table depicts the limits the system has been tested and certified to meet.

System Characteristic	Limitation	Limiting Component
Precincts in an election	3200	ClearDesign database
Splits per election	3200	ClearDesign database
District categories per election	100	ClearDesign database
Districts per single category	3200	ClearDesign database
Districts per election	3200	ClearDesign database
Contests in an election	3200	ClearDesign database
Choices in an election	3200	ClearDesign database
Card Styles in an election	3200	ClearDesign database

System Characteristic	Limitation	Limiting Component
Contests in a ballot style	60	ClearDesign database
Choices in a contest	300	ClearDesign database
Card styles in a precinct	50	ClearDesign database
Number of political parties per election	50	ClearDesign database
Counter groups per election	7	ClearDesign database
"Vote for" in a contest	50	ClearDesign database
Supported languages in an election	15	ClearDesign database
Number of write-ins per contest	50	ClearDesign database
Cards per ballot (per language)	5	ClearDesign database
Maximum oval positions per side: 5-inch ballot	60	Ballot length
Maximum oval positions per side: 11-inch ballot	180	Ballot length
Maximum oval positions per side: 14-inch ballot	240	Ballot length
Maximum oval positions per side: 17-inch ballot	300	Ballot length
Maximum oval positions per side: 19-inch ballot	360	Ballot length
Maximum oval positions per side: 22-inch ballot	420	Ballot length

Reporting Name Parameters (Reports Only)	Limitation
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	Limitation
Central-count scanners per network	10
Cards per precinct-voting device	10,000
Cards per central-count device	4,000,000

System Limits for ClearCount

Scanner Model	Sustained (not burst speed) ballots per hour						
	8.5x5	8.5x11	8.5x14	8.5x17	8.5x19	8.5x22	Typical county size (Central count)
fi-6400	5592	3624	2928	2448	2350	2236	Large (>100k voters)
fi-6800	7822	5508	4155	3352	3000	2800	Large (>100k voters)
fi-7180	3396	2040	1692	1400	1300	1200	Small (<25k voters)
fi-7800	5364	5028	3842	3556	3136	1566	Large (>100k voters)
fi-7900	6746	5635	4129	3926	3175	3108	Large (>100k voters
ClearCount can have a maximum of 10 ScanStation/Scanner pairs.							

Functionality

2005 VVSG Supported Functionality Declaration

Feature/Characteristic	Yes/No	Comment
• Precinct and BMD accessible via Parallel (Side) and Forward Approach.	Yes	
Closed Primary		
• Primary: Closed.	Yes	
Open Primary		
• Primary: Open Standard (provide definition of how supported).	Yes	Open Primary
• Primary: Open Blanket (provide definition of how supported).	Yes	General "top two"
Partisan & Non-Partisan:		
• Partisan & Non-Partisan: Vote for 1 of N race.	Yes	
• Partisan & Non-Partisan: Multi-member ("vote for N of M") board	Yes	
• Partisan & Non-Partisan: "vote for 1" race with a single candidate and write-in voting.	Yes	
• Partisan & Non-Partisan "vote for 1" race with no declared candidates and write-in voting.	Yes	
Write-In Voting:		
• Write-in Voting: System default is a voting position identified for write-ins.	Yes	
• Write-in Voting: Without selecting a write in position.	Yes	
• Write-in: With No Declared Candidates.	Yes	
• Write-in: Identification of write-ins for resolution at central count.	Yes	
Primary Presidential Delegation Nominations & Slates:		
• Primary Presidential Delegation Nominations: Displayed delegate slates for each presidential party.	Yes	

Feature/Characteristic	Yes/No	Comment
• Slate & Group Voting: one selection votes the slate.	Yes	
Ballot Rotation:		
• Rotation of Names within an Office; define all supported rotation methods for location on the ballot and vote tabulation/reporting.	Yes	Rotation by precinct and district
Straight Party Voting:		
• Straight Party: A single selection for partisan races in a general	Yes	
• Straight Party: Vote for each candidate individually.	Yes	
• Straight Party: Modify straight party selections with crossover votes.	Yes	
• Straight Party: A race without a candidate for one party.	Yes	
• Straight Party: "N of M race (where "N">1).	Yes	
• Straight Party: Excludes a partisan contest from the straight party selection.	Yes	
Cross-Party Endorsement:		
• Cross party endorsements, multiple parties endorse one candidate.	Yes	
Split Precincts:		
• Split Precincts: Multiple ballot styles.	Yes	
• Split Precincts: P & M system support splits with correct contests and ballot identification of each split.	Yes	
• Split Precincts: DRE matches voter to all applicable races.	N/A	Not a DRE system
• Split Precincts: Reporting of voter counts (# of voters) to the precinct split level; Reporting of vote totals is to the precinct level.	Yes	
Vote N of M:		
• Vote for N of M: Counts each selected candidate if the maximum is not exceeded.	Yes	
• Vote for N of M: Invalidates all candidates in an overvote (paper).	Yes	
Recall Issues, with options:		
• Recall Issues with Options: Simple Yes/No with separate race/election. (Vote Yes or No Question)	Yes	
• Recall Issues with Options: Retain is the first option, Replacement candidate for the second or more options (Vote 1 of M)	Yes	
• Recall Issues with Options: Two contests with access to a second contest conditional upon a specific vote in contest one. (Must vote Yes to vote in 2nd contest.)	No	
• Recall Issues with Options: Two contests with access to a second contest conditional upon any vote in contest one. (Must vote Yes to vote in 2nd contest.)	No	
Cumulative Voting		
• Cumulative Voting: Voters are permitted to cast, as many votes as there are seats to be filled for one or more candidates. Voters are not limited to giving only one vote to a candidate. Instead, they can put multiple votes on one or more candidate.	No	
Ranked Order Voting		
• Ranked Order Voting: Voters can write in a ranked vote.	No	

Feature/Characteristic	Yes/No	Comment
• Ranked Order Voting: A ballot stops being counting when all ranked choices have been eliminated.	No	
• Ranked Order Voting: A ballot with a skipped rank counts the vote for the next rank.	No	
• Ranked Order Voting: Voters rank candidates in a contest in order of choice. A candidate receiving a majority of the first-choice votes wins. If no candidate receives a majority of first choice votes, the last place candidate is deleted, each ballot cast for the deleted candidate counts for the second-choice candidate listed on the ballot. The process of eliminating the last place candidate and recounting the ballots continues until one candidate receives a majority of the vote.	No	
• Ranked Order Voting: A ballot with two choices ranked the same, stops being counted at the point of two similarly ranked choices.	No	
• Ranked Order Voting: The total number of votes for two or more candidates with the least votes is less than the votes of the candidate with the next highest number of votes, the candidates with the least votes are eliminated simultaneously and their votes transferred to the next-ranked continuing candidate.	No	
Provisional or Challenged Ballots		
• Provisional/Challenged Ballots: A voted provisional ballot is identified but not included in the tabulation but can be added in the central count.	Yes	via jurisdiction processes
• Provisional/Challenged Ballots: A voted provisional ballot is included in the tabulation, but is identified and can be subtracted in the central count.	No	
• Provisional/Challenged Ballots: Provisional ballots maintain the secrecy of the ballot.	Yes	
Overvotes (must support for specific type of voting system)		
• Overvotes: P & M: Overvote invalidates the vote. Define how overvotes are counted.	Yes	If the system detects more votes than allowed by the vote rule, it is counted as an overvote
• Overvotes: DRE: Prevented from or requires correction of overvoting.	Yes	Yes, for ClearAccess
• Overvotes: If a system does not prevent overvotes, it must count them. Define how overvotes are counted.	Yes	If the system detects more votes than allowed by the vote rule, it is counted as an overvote
• Overvotes: DRE systems that provide a method to data enter absentee votes must account for overvotes.	N/A	No method to data enter absentee via ClearAccess
Undervotes		
• Undervotes: System counts undervotes cast for accounting purposes.	Yes	
Blank Ballots		
• Totally Blank Ballots: Any blank ballot alert is tested.	Yes	
• Totally Blank Ballots: If blank ballots are not immediately processed, there must be a provision to recognize and accept them.	Yes	via adjudication in ClearCount

Feature/Characteristic	Yes/No	Comment
• Totally Blank Ballots: If operators can access a blank ballot, there must be a provision for resolution.	Yes	via adjudication in ClearCount
Networking		
• Wide Area Network – Use of Modems.	No	
• Wide Area Network – Use of Wireless.	No	
• Local Area Network – Use of TCP/IP.	Yes	
• Local Area Network – Use of Infrared.	No	
• Local Area Network – Use of Wireless.	No	
• FIPS 140-2 validated cryptographic module.	Yes	
Used as (if applicable):		
• Precinct and Central counting devices.	Yes	
• Ballot Marking Device.	Yes	
Overvotes (must support for specific type of voting system)		
• Overvotes: P & M: Overvote invalidates the vote. Define how overvotes are counted.	Yes	If the system detects more votes than allowed by the vote rule, it is counted as an overvote
• Overvotes: DRE: Prevented from or requires correction of overvoting.	Yes	Yes for ClearAccess
• Overvotes: If a system does not prevent overvotes, it must count them. Define how overvotes are counted.	Yes	If the system detects more votes than allowed by the vote rule, it is counted as an overvote
• Overvotes: DRE systems that provide a method to data enter absentee votes must account for overvotes.	N/A	No method to data enter absentee via ClearAccess
Undervotes		
• Undervotes: System counts undervotes cast for accounting purposes.	Yes	
Blank Ballots		
• Totally Blank Ballots: Any blank ballot alert is tested.	Yes	
• Totally Blank Ballots: If blank ballots are not immediately processed, there must be a provision to recognize and accept them.	Yes	via adjudication in ClearCount
• Totally Blank Ballots: If operators can access a blank ballot, there must be a provision for resolution.	Yes	via adjudication in ClearCount
Networking		
• Wide Area Network – Use of Modems.	No	
• Wide Area Network – Use of Wireless.	No	
• Local Area Network – Use of TCP/IP.	Yes	
• Local Area Network – Use of Infrared.	No	
• Local Area Network – Use of Wireless.	No	
• FIPS 140-2 validated cryptographic module.	Yes	
Used as (if applicable):		
• Precinct and Central counting devices.	Yes	
• Ballot Marking Device.	Yes	