New York State Board of Elections
Voting System Verification Testing

Dominion Voting Systems DS 5.16
Master Test Report v5.0

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Revision History

Date	Version	Author	Revision Summary
March 7, 2023	1.0	M. Santos	Initial Release
March 24, 2023	2.0	M. Santos	Updates for NYSTEC comments
April 13, 2023	3.0	M. Santos	Updated for COTS equipment for ICX and added in state testing acceptance for DS 5.15
May 2, 2023	4.0	M. Santos	Updated Conclusion for resolved issues.
May 15, 2023	5.0	M. Santos	Updated for Jiras D516-23 and D516-25

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1 INTRODUCTION

1.1 Project Overview

The New York State Board of Elections (NYSBOE) requires that before any voting system may be eligible to be purchased in New York State (NYS), it must be certified by the NYSBOE that such system(s) meet the requirements of the NYS Election Law, Section 6209 of Subtitle V of Title 9 of the Official Compilation of Codes, Rules and Regulations of the State of New York, and the federal 2005 Voluntary Voting System Guidelines (VVSG), Volumes 1 and 2.
SLI Compliance has been engaged by the NYSBOE to provide verification testing services to support the process of voting system certification by the NYSBOE.

1.2 Purpose

The purpose of this Final Master Test Report (defined as Deliverable 10: Final Master Test Report) is to create documentation of the testing that SLI Compliance, as NYSBOE's Independent Test Authority (ITA), performed throughout the course of voting system verification testing.

1.3 References

The following key documents were used in preparing this test plan.

1. SLI VSTL Quality System Manual, v 3.0, February 13, 2019.
2. Voluntary Voting System Guidelines (2005 VVSG)
3. NYS 2022 Election Law
4. NYS 6209 Regulations

1.4 Terms and Abbreviations

The following terms and abbreviations were used throughout this document:

Table 1 – Terms and Abbreviations

Term	Abbreviation	Definition
Ballot Marking Device	BMD	An accessible computer-based voting system that produces a marked ballot (usually paper) that is the result of voter interaction with visual or audio prompts.
Commercial Off the Shelf Software	COTS	Computer software that is ready-made and available for sale, lease, or license to the general public

Term	Abbreviation	Definition
Direct Recording Electronic	DRE	Voting systems that, using Touch Screen or other user interfaces, directly record the voter's selections in each race or contest on the ballot in electronic form.
Election Assistance Commission	EAC	An independent, bipartisan commission created by the Help America Vote Act (HAVA) of 2002 that operates the federal government's voting system certification program.
Election Management System	EMS	Typically, a database management system used to enter jurisdiction information (district, precincts, languages, etc.) as well as election specific information (races, candidates, voter groups (parties), etc.). In addition, the EMS is also used to layout the ballots, download the election data to the voting devices, upload the results and produce the final results reports.
Functional Configuration Audit	FCA	The testing activities associated with the Functional testing of the system
Independent Test Authority	ITA	This is a test lab that is not connected with the vendor or manufacturer of the voting system.
Institute of Electrical and Electronics Engineers	IEEE	A non-profit organization, IEEE is the world's leading professional association for the advancement of technology.
National Institute of Standards and Technology	NIST	NIST is a non-regulatory federal agency within the U.S. Dept. of Commerce. Its mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life.
National Voluntary Laboratory Accreditation Program	NVLAP	A division of NIST that provides third-party accreditation to testing and calibration laboratories.
New York State	NYS	Acronym for the State of New York
New York State Board Of Elections	NYSBOE	The New York State Board of Elections is a bipartisan agency vested with the responsibility for administration and enforcement of all laws relating to elections in New York State.
New York State Technology Enterprise Corporation	NYSTEC	NYSTEC is a private, not-for-profit engineering company with offices in the state of New York. It acts as a trusted technology advisor to government agencies and private institutions.

Term	Abbreviation	Definition
Physical Configuration Audit	PCA	The testing activities associated with the physical aspects of the system (hardware, documentation, builds, source code, etc.)
Request For Information (form)	RFI	A form used by testing laboratories to request, from the NYSBOE, interpretation of a technical issue related to testing of voting systems.
Requirements Matrix	N/A	This is the matrix created by and maintained by SLI Compliance that traces the requirements to the various test cases, test steps, and test methods.
Technical Data Package	TDP	This is the data package that is supplied by the vendor and includes: Functional Requirements, Specifications, End-user documentation, Procedures, System Overview, Configuration Management Plan, Quality Assurance Program, and manuals for each of the required hardware, software, firmware components of each voting system.
Voluntary Voting Systems Guidelines Volumes 1 & 2	VVSG	A set of specifications and requirements against which voting systems can be tested to determine if the systems provide all of the basic functionality, accessibility and security capabilities required of these systems.
Voting System Test Lab	VSTL	This is a designation for a test lab that is accredited by the Election Assistance Commission.
Voting System Under Test	VSUT	The designation for a voting system that is currently being tested.

1.5 Scope of Testing

SLI Compliance provided verification testing on the DS 5.16 system identified by the NYSBOE based on the guidelines and test approach established for voting system verification testing as defined by the NYSBOE (please see section 1.6 – Approved Project Testing Approach).

This effort included the testing required to demonstrate testing of DS 5.16 against all the applicable requirements of the 2005 VVSG and NYS laws and regulations, as specified in the project Requirements matrix (Attachment A – Dominion D-Suite 5.16 NYS System Requirements Matrix w Test Cases).

For the voting system identified for verification, Voting System Specific Test Reports (defined as Deliverable 9: Voting System Specific Test Reports) were developed by SLI

Compliance to address the areas of Source Code Review, Security Source Code Review, Functional Testing and Security Functional Testing.

1.6 Approved Project Testing Approach

Per the testing approach approved for the Dominion Voting Systems DS 5.16 project, by NYSBOE (see "Attachment B - SLI Testing Approach DVS 5.16 - 1.28.2022 - FINAL"), the following details dictated the approach of the project:
"

Based on review/approval by NYSBOE/NYSTEC:

- All previous EAC source code review to VVSG requirements will be accepted as a first round of review.
- All previous EAC functional testing to SHALL VVSG requirements will be accepted and leveraged.
- All previous EAC security testing to SHALL VVSG requirements will be accepted and leveraged.
- All previous EAC hardware testing to SHALL VVSG requirements will be accepted and leveraged.

A secondary source code review to VVSG requirements will be conducted by SLI Compliance.

- A 10% sample review will be conducted against all VVSG SCR requirements and will include:
  - a manual review to higher risk VVSG requirements.
  - a run of automated tool against all applicable VVSG requirements.
- A diff will be conducted and all source code changes not included in EAC certification, will be reviewed at 100%.
- Source code changes will be compared to the Change Notes to attempt to detect unidentified changes.
- A full source code review will be done against NYSBOE requirements.

A trusted build/s will be conducted by SLI Compliance, if needed.

Security testing will be conducted by SLI Compliance to include the following:

- Error messaging and Auditing will be tested against the VVSG
- A full security test will be done against NYSBOE requirements

Functional testing will be conducted by SLI Compliance to include the following:

- An end-to-end test will be conducted to verify the build and to attempt to detect unidentified changes.
- All functional testing of applicable SHOULD VVSG requirements will be tested as SHALL, as needed.

- All functional changes not included in EAC certification, will be tested along with any testing deemed necessary to confirm that the changes didn't affect other areas or cause issues around the changes made.
- Conduct upgrade testing and identify issues found.

Documentation review will be conducted by SLI Compliance to include the following:

- A diff will be conducted and all documentation changes not included in the EAC certification, will be reviewed at 100%.
- Documentation changes will be compared to the Change Notes to attempt to detect unidentified changes.

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1.7 Final Master Test Report Attachments

The following attachment(s) are an integral part of this Final Master Test Report:

- Attachment A – Dominion D-Suite 5.16 NYS System Requirements Matrix w Test Cases
- Attachment B - SLI Testing Approach DVS 5.16 - 1.28.2022 – FINAL
- Attachment C – NYS Dominion Voting Systems DS 5.16 Master JIRAs v3.0 (Confidential)

1.8 Scope of DS 5.16 System

This section provides a description of the scope of DS 5.16 voting system components.

The DS 5.16 system represents a set of software applications for pre- voting, voting and post-voting election project activities for jurisdictions of various sizes and political division complexities.

EMS functions include:

- Defining the political divisions of the jurisdiction and organizing the election with its hierarchical structure, attributes, and associations.
- Defining the election events with their attributes such as the election name, date, and type, as well as contests, candidates, referendum questions, voting locations and their attributes.
- Producing the election definition and auditing reports.
- Providing administrative management functions for user, database, networking, and system management.
- Preparing and producing ballots for polling place and absentee voting or by-mail voting.
- Preparing media for precinct voting devices and central count devices.
- Configuring and programming the **ImageCast X (ICX)** BMD devices.
- Configuring and programming the **ImageCast Evolution (ICE), ImageCast Precinct (ICP)** and **ImageCast Precinct 2 (ICP2)** digital scanners for marked paper ballots and **ICX** printed vote records.

- Import of the Cast Vote Records from **ICP, ICP2, ICE** devices and **ICC**.
- Preview and validation of the election results.
- Producing election results tally according to voting variations and election system rules.
- Producing a variety of reports of the election results in the desired format.
- Publishing of the official election results. Auditing of election results including ballot images and log files.

- **ICE, ICP** and **ICP2** are scan precinct ballot counters (tabulators) that are used in conjunction with an external ballot box. The units are designed to scan marked paper ballots or **ICX** printed vote records, interpret and record voter marks on the marked paper ballot or record voter selections on the printed vote records, and deposit the ballots into the secure ballot box.
- The **ICX** is a standalone precinct level Ballot Marking Device (BMD) which also includes an Audio Tactile Interface (ATI), which allows voters who cannot complete a paper ballot to generate a machine-readable and human readable paper ballot, based on vote selections made, using the ATI.
- **ImageCast Central** is a high-speed, central digital ballot scanning system used for high-volume processing of ballots (such as vote by mail). The unit is based on COTS scanning hardware coupled with custom Dominion-developed ballot processing application software which resides on an attached workstation.
- **ImageCast Voter Activation** is an application for ICX ballot marking device smart card programming.

Table 3 – Dominion Voting Systems DS 5.16 Software Components

System Component	Application(s)	Version
EMS	Election Management Software and Central Count Location Tabulation and ReportSoftware	5.16.7.1
ICC	Central count application software	5.16.6.1
ICVA	ICX smart card programming	5.16.7.1
ICE	Scanner Firmware	5.16.6.1
ICP	Scanner Firmware	5.16.6.1
ICP2	Scanner Firmware	5.16.4.1
ICX	BMD Firmware	5.16.5.1
ADJ	Adjudication application software	5.16.7.1

Table 4 – Dominion Voting Systems DS 5.16 Custom Hardware Components

Hardware Description	Version
ICE – Precinct Scanner	PCOS-410A
ICP – Precinct Scanner	PCOS-300A, PCOS-300B, PCOS-320A, and PCOS-320C
ICP2 – Precinct Scanner	PCOS-330A
ICX – Electronic BMD	Tablet: Avalue HID-21V-BTX-B1R

Table 5 – Dominion Voting Systems DS 5.16 COTS Hardware Components

COTS Hardware Description	Version
Democracy Suite Election Management System (EMS)	
EMS Standard Server Configuration - Microsoft Windows Server 2019 (Build 1809) - Microsoft SQL Server 2019 Standard - Server computer system per 2.02 Democracy Suite System Configuration Overview	
EMS Express Server Configuration - Microsoft Windows 10 Pro (Build 2004) - Microsoft SQL Server 2019 Express - Desktop computer system per 2.02 Democracy Suite System Configuration Overview	
Client Workstation Configuration - Microsoft Windows 10 Pro (Build 2004) - Desktop or laptop computer system per 2.02 Democracy Suite System Configuration Overview	
Auxiliary Equipment - iButton to 1-Wire USB Adapter: Dallas Maxim DS1402-RP8+ - iButton Reader/Writer: Dallas Maxim DS9490R# - Compact Flash Reader: Lexar Professional USB 3.0 Dual-Slot Card Reader - Compact Flash Reader: Kingston USB 3.0 High-Speed Media Reader - Compact Flash Reader: Hoodman Steel USB3 - Smart Card Reader: Advanced Card Systems ACR38U - Smart Card Reader: Advanced Card Systems ACR39U - Ethernet Switch: Dell x1026 - Ethernet Switch: Dell x1008 - Ethernet Switch: Cisco CBS350-8T-E-2G - Ethernet Switch: Cisco CBS350-24T-4G	

- Mini-Server Rack: StarTech RK1236BKF - Rack Power Distribution Unit: APC AP9562 - UPS: Tripp Lite SMART1500RMXL2U - UPS: APC SMT1500 Smart-UPS - UPS: APC SMT1500C Smart-UPS - UPS: CyberPower PR1500LCD - UPS: CyberPower PR1500LCD-VTVM - Keyboard, Mouse, Headset with microphone, Audio Adapter networking switch – COTS computing accessories - EMS Report Printer: HP M404dn laser or equivalent	
Election media - iButton (Pollworker): Dallas Maxim DS1963S-F5+ (w/Black Key Ring Mount DS9093A+) - Compact Flash Memory Cards (16GB): Centon C4-CM-CF-16.4 - USB Memory Device (8GB): Centon S4-CM-U3P2-8.1 - USB Memory Device (16GB): Centon S4-CM-U3P2-16.1 - USB Memory Device (8GB): Apacer EH353-M APHA008GAG0CG-3TM - USB Memory Device (16GB): Apacer EH353-M APHA016GAG0CG-3TM - Smart Cards: ACOS-6-64	
ImageCast Voter Activation (ICVA)	
Client Workstation Configuration - Microsoft Windows 10 Pro (Build 2004) - Microsoft Windows Defender - Desktop computer system per 2.02 Democracy Suite System Configuration Overview	5.16.7.1
Auxiliary Equipment - Smart Card Reader: Advanced Card Systems ACR38U - Smart Card Reader: Advanced Card Systems ACR39U	5.16.7.1
Election Media - USB Memory Device (8GB): Centon S4-CM-U3P2-8.1 - USB Memory Device (16GB): Centon S4-CM-U3P2-16.1 - USB Memory Device (8GB): Apacer EH353-M APHA008GAG0CG-3TM - USB Memory Device (16GB): Apacer EH353-M APHA016GAG0CG-3TM - Smart Cards: ACOS-6-64	5.16.7.1
ImageCast Central Count (ICC)	
ICC Scanner: Canon DR-G1130 ICC Scanner: Canon DR-X10C ICC Scanner: Canon DR-G2140	5.16.6.1

Auxiliary Equipment - iButton to 1-Wire USB Adapter: Dallas Maxim DS1402-RP8+ - iButton Reader/Writer: Dallas Maxim DS9490R# - Compact Flash Reader: Lexar Professional USB 3.0 Dual-Slot Card Reader - Compact Flash Reader: Kingston USB 3.0 High-Speed Media Reader - Compact Flash Reader: Hoodman Steel USB3 - UPS: - APC SMT1500 Smart-UPS - APC SMT1500C Smart-UPS - CyberPower PR1500LCD - CyberPower PR1500LCD-VTVM - Imprinter – Canon DR-G1130 - Imprinter – Canon DR-X10C - Imprinter – Canon DR-G2140 - Consumables: - Ink Cartridge – Imprinter (G1130) - Ink Cartridge – Imprinter (X10C) - Ink Cartridge – Imprinter (G2140)	5.16.6.1
Election Media - iButton: Dallas Maxim DS1963S-F5+ (with Key Ring Mount DS9093A+) - Compact Flash Memory Cards (16GB): Centon C4-CM-CF-16.4 - USB Memory Device (8GB): Centon S4-CM-U3P2-8.1 - USB Memory Device (16GB): Centon S4-CM-U3P2-16.1 - USB Memory Device (8GB): Apacer EH353-M APHA008GAG0CG-3TM - USB Memory Device (16GB): Apacer EH353-M APHA016GAG0CG-3TM	5.16.6.1
ImageCast X with BMD (ICX BMD)	
Tablet: Avalue HID-21V-BTX-B1R (21.5 in screen-Prime)	5.16.5.1
Optional Hardware - Accessible-Tactile Interface (ATI-USB) box - Precinct Cart - Consumables o Ballot Paper	5.16.5.1
COTS Hardware - BMD Printers: - HP M404dn - HP M404DNE - Avision AP3061 - UPS: - CyberPower PR1500LCD - CyberPower PR1500LCD-VTVM - APC SMT1500 Smart-UPS (for use with HP M404dn Printer)	5.16.5.1

- APC SMT1500C Smart-UPS (for use with HP M404dn Printer) - Election Media - USB Memory Device (8GB): Centon S4-CM-U3P2-8.1 - USB Memory Device (16GB): Centon S4-CM-U3P2-16.1 - USB Memory Device (8GB): Apacer EH353-M APHA008GAG0CG-3TM - USB Memory Device (16GB): Apacer EH353-M APHA016GAG0CG-3TM - Smart Cards: ACOS-6-64	
Optional COTS products - Headphone: Cyber Acoustics ACM-70 or equivalent - Sip & puff: Enabling Devices #972 - Paddle switches: Enabling Devices #971 - Paddle switches: AbleNet 10033400 (2x) - Consumables: - Sip & puff straws: Enabling Devices #970K (Pkg of 10) - Headphone Covers: Newmatic Sound Systems SCXSB (Pkg of 100) - Toner: Avision 015-0208-21 - Toner: HP CF258A, CF258X - Image Drum: Avision 015-0049-11	5.16.5.1
ImageCast Precinct (ICP)	
Ballot Box Options - Stackable Molded Plastic: BOX-330A - Foldable Coroplast Plastic: BOX-340C (without Latch) - Foldable Coroplast Plastic: BOX-341C (with Latch) - Collapsible Metal: ElectionSource IM-COLLAPSIBLE BIN - Accessories: ICP Baseplate Adapter Kit for all listed Ballot Boxes	5.16.6.1
Optional Hardware - Accessible-Tactile Interface (ATI) box - Consumables: - Paper Rolls – Report Printer	5.16.6.1
COTS Hardware - Election media - iButton (Pollworker): Dallas Maxim DS1963S-F5+ (w/Black Key Ring Mount DS9093A+) - iButton (Admin/Tech): Dallas Maxim DS1963S-F5+ (w/Blue Key Ring Mount DS9093AB+) - Compact Flash Memory Cards (16GB): Centon C4-CM-CF-16.4	5.16.6.1
Optional COTS Hardware - Headphone: Cyber Acoustics ACM-70, ACM-70B or equivalent - Sip & puff: Enabling Devices #972 - Paddle switches: Enabling Devices #971	5.16.6.1

- Paddle switches: AbleNet 10033400 (2x) - Paddle Switch Cable: Hosa Technology YMM-261 (for use with AbleNet switches) - Consumables: - Sip & puff straws: Enabling Devices #970K (Pkg of 10) - Headphone Covers: Newmatic Sound Systems SCXSB (Pkg of 100)	
ImageCast Precinct (ICP2)	
Ballot Box Options - Stackable Molded Plastic: BOX-350A - Foldable Coroplast Plastic: BOX-340C (without Latch) - Foldable Coroplast Plastic: BOX-341C (with Latch) - Collapsible Plastic: ElectionSource IM-COLLAPSIBLE BIN	5.16.4.1
Optional Hardware - Consumables: - Paper Rolls – Report Printer	5.16.4.1
COTS Hardware - Election media - iButton (Pollworker): Dallas Maxim DS1963S-F5+ (w/Black Key Ring Mount DS9093A+) - iButton (Admin/Tech): Dallas Maxim DS1963S-F5+ (w/Yellow Key Ring Mount DS9093AY+) - SDHC Memory Cards (8GB): Centon S4-CM-SDHU1-8G-002 - SDHC Memory Cards (8GB): Centon C4-CM-SDU1-8.2	5.16.4.1
ImageCast Evolution (ICE)	
Hardware version: PCOS 410A - IR Sensor Board Firmware version: 1.0.003 - Motherboard FPGA version: 1.1.5 - Scanner Board FPGA version: 1.1.2 - Logger Controller version: 2.0.2 - Power Controller version: 3.0.5 - Integrated Printer Controller version: 4.1.6 - Bootloader version: 1.3.4.63 - Ballot Box Options - Stackable Molded Plastic: BOX-410A - Foldable Coroplast Plastic: BOX-420A	5.16.6.1
Optional Hardware - Accessible-Tactile Interface (ATI) box - Light Pole for Ballot Boxes	5.16.6.1
Election media - iButton (Pollworker): Dallas Maxim DS1963S-F5+ (w/Black Key Ring Mount DS9093A+) - iButton (Admin/Tech): Dallas Maxim DS1963S-F5+ (w/Yellow Key Ring Mount DS9093AY+)	5.16.6.1

- Compact Flash Memory Cards (32GB): RiTek RDCF32G-233XMCB2-i - Compact Flash Memory Cards (32GB): SanDisk SDCFX-032G - Compact Flash Memory Cards (16GB): Centon C4-CM-CF-16.4 - Compact Flash Memory Cards (16GB): RiTek RDCF16G-233XMCB2-i - Compact Flash Memory Cards (16GB): SanDisk SDCFX-016G - Compact Flash Memory Cards (8GB): RiTek RDCF8G-233XMCB2-i - Compact Flash Memory Cards (4GB): RiTek RDCF8G-233XMCB2-i	
Optional COTS Hardware - Headphone: Cyber Acoustics ACM-70, ACM-70B or equivalent - Sip & puff: Enabling Device #972 - Sip & puff straws: #970K (Pkg of 10) - Paddle switches: Enabling Device #971 - Paddle switches: AbleNet 10033400 (2x) - Paddle Switch Cable: Hosa Technology YMM-261 (for use with AbleNet switches)	5.16.6.1

2 TEST ITEMS AND PASS/FAIL CRITERIA

2.1 Requirements to be Tested

The SLI requirements management tool stores the following:

- Requirements Matrix containing:
  - 2005 VVSG, Volume 1
  - 2005 VVSG, Volume 2
  - NYS 2022 Election Law
  - NYS 6209 Regulations
- Traceability from Requirements to test cases

2.2 Test Item Pass/Fail Criteria

Testing was conducted as an independent verification and validation across the DS 5.16 system. System performance to pass/fail criteria was measured against expected results for each test case and related set of test procedures as defined by the Requirements Matrix. Each feature passed or failed depending upon the results of the testing performed. If the actual output from an action was equal to the expected output specified by a test case, then the action passed; if not, it failed.

3 TEST TASKS

NYSBOE Verification Testing included detailed testing required to ensure compliance to the approved Requirements Matrix are provided in this section. It should be noted that the results and discrepancy reports for each of the review/assessment and test activities are documented and maintained throughout each activity until the activity has been completed. Upon completion of the verification test engagement, all results are provided in the Dominion Voting Systems DS 5.16 Specific Test Reports and archived with all testing artifacts.

3.1 Physical Configuration Audit

3.1.1 Documentation Review

Dominion Voting Systems DS 5.16 documentation was reviewed as applicable to the approved Test Approach (please see section 1.6 – Approved Project Test Approach) in the delivery of the DS 5.16's New York TDP, as well as all NYSBOE Election Law requirements).

General Documentation Review

As applicable to the approved Test Approach (please see section 1.6 – Approved Project Test Approach), the SLI Compliance test process included conducting a TDP review of the TDP (Technical Data Package).
Dominion DS 5.16 documentation that was included in EAC certifications and State certifications was accepted as meeting all relevant 2005 VVSG requirements, including those requirements in Volume 1, Section 8.7, and 2005 VVSG Volume 2, Section 2 and Section 5.

Security Documentation Review

Dominion Voting Systems DS 5.16 documentation that was included in EAC certifications and State certifications was accepted as meeting all relevant 2005 VVSG Security requirements.

The documentation review process consisted of an automated search through all documents followed by manual review.
A string search utility was leveraged in a custom script written to scan all documents and report a list of findings based on a preconfigured wordlist.
A copy of the script source code, all wordlists used, and the resulting artifacts generated are included in the associated testing artifacts.
Following the generation of a comma-separated value (CSV) document during the automated script's execution, a manual review was conducted to evaluate the results and verify all documentation-related requirements are sufficiently met.
For additional information, please review the Security Test Report and artifacts.
No documentation discrepancies were noted.

3.1.2 Source Code Review

DS 5.16 source code was accepted for all applicable 2005 VVSG requirements, as per the "Attachment B - Testing Approach for Dominion Voting Systems DS 5.16" document. A review to NYS 2022 Election Law and 6209 Regulations was performed. See "NYSBOE Dominion Voting Systems DS 5.16 Source Code Review Test Report" and "NYSBOE Dominion Voting Systems DS 5.16 Security Source Code Review Test Report" for additional details.
Discrepancies found during testing may be found in ""NYSBOE Dominion Voting Systems DS 5.16 Source Code Review Test Report"" "Attachment D - Source Code Review Discrepancy Review Forms (Confidential)":

3.1.3 Trusted Build

One Trusted Build was performed during this certification examination.

3.1.4 Software and Hardware Configuration Audit

The Software and Hardware Audit compared the voting system components (hardware and software) to the TDP submitted by Dominion Voting Systems.
The provided configurations conformed to Dominion Voting Systems specifications of the system under test, including TDP documentation, and was consistent with configurations listed within the DS 5.16 EAC certification.

3.2 Functional Configuration Audit

3.2.1 Review of Prior ITA Test Cases and Results

No prior verification testing completed by previous NYSBOE ITAs was submitted for review.

3.2.2 Review of EAC Certifications

SLI Compliance accepted and leveraged all prior verification testing completed by previous EAC certifications, as per the NYSBOE "Attachment B - Testing Approach for Dominion Voting Systems DS 5.16" document.

3.2.3 Review of Other State Verification Testing or Risk Analysis Results

State certification reports for the DS 5.15 voting system test were submitted for review and accepted.

3.2.4 Review of Prior Hardware Environmental Testing

Hardware environmental testing completed by NVLAP or A2LA accredited test labs, within an EAC certification, for overall system capabilities, voting, and post-voting functions as well as adherence to hardware environmental and EMC standards was accepted as per the NYSBOE "Attachment B - Testing Approach for Dominion Voting Systems DS 5.16" document.

3.2.5 Hardware Environmental Testing

All hardware environmental testing completed against the EAC 2005 VVSG hardware environmental and EMC test requirements, within EAC certifications, was accepted, as per the NYSBOE "Attachment B - Testing Approach for Dominion Voting Systems DS 5.16" document.

3.2.6 Module Testing

SLI Compliance designed module test cases to provide coverage of the applicable requirements, as per the NYSBOE "Attachment B - Testing Approach for Dominion Voting Systems DS 5.16" document.

3.2.7 System Testing

System Testing involved exercising the specific functions of DS 5.16 to the requirements, as per the NYSBOE "Attachment B - Testing Approach for Dominion Voting Systems DS 5.16" document.
Formal Test Execution was performed, within the provided environment of the DS 5.16 system, to verify all modifications and pertinent requirements, as defined in "Attachment A – Dominion Voting Systems DS 5.16 NYS System Requirements Matrix w Test Cases.
This includes validation of the voting system in a true end-user environment, following all pre-election day, election day, and post-election day voting rules and processes. The intent is to provide verification that a system can be used to perform its job following the exact set of processes and steps that would be used by the target customer or end-user.

The following types of system testing were not employed for DS 5.16, as they were covered by EAC certification testing:

- Nominal Conditions
- Failure Injection
- Data Driven
- Usability
- Data Referential Integrity
- Regression
- Volume Test
- Stress Tests
- Accessibility Test
- Performance Tests
- Recovery

Regression Testing

No Regression testing was performed, as no new Trusted Builds were performed during the DS 5.16 examination, after the initial Trusted Build.

Formal Functional Test Execution

SLI Compliance performed the Formal Functional Test Execution testing which included functional, NY Law verification applicable to the scope of the campaign, as per the NYSBOE "Attachment B - Testing Approach for Dominion Voting Systems DS 5.16" document and "Attachment A – NY Dominion D-Suite 5.16 Requirements Matrix w TestCases". This is the formal functional test of the system to ensure that all Dominion Voting Systems modifications work, and existing features work as expected.

See "NYSBOE Dominion Voting Systems DS 5.16 Functional Test Report" for details of functional testing performed.

End to End

End to End testing was performed, utilizing General and Primary elections during the NYS DS 5.16 examination, which encompassed system utilization from creating an election definition, preparing election media and artifacts, opening of polls, processing ballots, as well as the accumulation, adjudication, tallying and reporting of results.

3.2.8 Security Testing

SLI Compliance performed the Security testing applicable to the scope of the campaign, as per "Attachment A – NY Dominion D-Suite 5.16 Requirements Matrix w TestCases" and the NYSBOE "Attachment B - Testing Approach for Dominion Voting Systems DS 5.16" document.
See "NYSBOE Dominion Voting Systems DS 5.16 Security Functional Test Report" for details of Security functional testing performed.

The following types of Security testing for DS 5.16, utilized a combination of leveraging EAC certification testing in conjunction with SLI examination as per the approved testing approach (see section 1.6). Portions covered by SLI are listed below:

- Role
  - (Was examined as a part of the "Access" section of the penetration test, which included investigation Role-based access controls (RBAC))
- Access
  - (Was examined as a part of the "Access" section of the penetration test, which included a review of physical security)
- System Security
  - (Was examined to verify executable resilience against tampering as a part of the "Privilege Escalation" section of the penetration test)
- System Log
  - (Was examined as a part of the "Defense Evasion" section of the penetration test to verify file integrity)
- Audit Records
  - (Was examined as a part of the "Defense Evasion" section of the penetration test, which included tampering with logging processes)
- Software Security
  - (Was examined to verify that software files could not be modified and that unauthorized software was prevented from being installed on devices as a part of the "Execution" section of the penetration test)
- Threat Protection
  - (Was examined as a part of the "Execution" section of the penetration test, evaluating the susceptibility to malware)
- Audit Log
  - (Was examined as a part of the "Defense Evasion" section of the penetration test to modify or delete log files and data)
- Vote Count Integrity
  - (Was examined within the "Execution", "Exfiltration", and "Cryptography" sections of the penetration test)

- Data Protection
  - (Was examined within the “Execution”, “Exfiltration”, and “Cryptography” sections of the penetration test)
- External Access
  - (Was examined within the “Execution”, “Exfiltration”, and “Cryptography” sections of the penetration test)

3.2.9 Review for Known Vulnerabilities

Any known vulnerabilities provided by Dominion Voting Systems are included in the Security testing process. All vulnerabilities are listed within the Security test report and associated attachments, including detailed vulnerability information and review of the potential for exploitation. For additional information, please review the ”NYSBOE Dominion Voting Systems DS 5.16 Security Functional Test Report”.

4 Conclusion

This section summarizes the conclusions for each of the areas of examination within this project.

This “Results Summary” section details issues that were encountered during the project, listing the issues as “JIRA”s, where JIRA is the discrepancy tracking application utilized by SLI Compliance.

By the conclusion of this project, all issues, except for two, were resolved after delivery of updates or by consultation with the NYSBOE.

All specific details for each area can be found in that areas specific test report and accompanying documentation.

4.1 TDP Review

SLI Compliance reviewed the DS 5.16 TDP against the New York State Requirements and 6209 Election Law. During the course of review, SLI Compliance found 16 documentation issues during this documentation review. These requirement issues were documented in JIRA; D516-3, D516-17, D516-24, D516-27, D516-28, D516-32, D516-33, D516-35, D516-36, D516-37, D516-38, D516-39, D516-40, D516-41, D516-50 and D516-52.
All issues were resolved with the submission of modified documentation.
All issues discovered during testing have been addressed and all Jira’s marked as resolved.
No open issues remain for this area of review.

Additional TDP Review details can be found in the “TDP Review for Dominion Voting Systems DS 5.16” and accompanying documentation.

4.2 Dominion Voting Systems Functional Testing

SLI has completed functional testing of the **Dominion Voting Systems DS 5.16** system against the referenced 2005 VVSG and NY 2022 Election Law requirements. There were 17 findings, JIRAs: D516-1, D516-6, D516-30, D516-31, D516-42, D516-43, D516-44, D516-45, D516-46, D516-47, D516-48, D516-49, D516-51, D516-53, D516-54, D516-55 and D516-56.
One requirement finding (D516-6) has been resolved with the submission of either new documentation or modified documentation or compensating controls.

All issues discovered during testing have been addressed and all Jira's marked as resolved.
No open issues remain for this area of review.

Additional Functional Testing details can be found in the "NYSBOE Dominion Voting Systems DS 5.16 Functional Test Report", Attachment C – NYS Dominion Voting Systems DS 5.16 JIRAs (Confidential) and accompanying documentation.

4.3 Hardware Testing

SLI has completed Hardware testing of the **Dominion Voting Systems DS 5.16 system** against the referenced 2005 VVSG and NY 2022 Election Law requirements, as per "SLI Testing Approach for Dominion Voting Systems DS 5.16".
All components of the DS 5.16 system had all hardware requirements accepted from EAC certifications.

4.4 Source Code Review

SLI has completed the source code review of the **Dominion Voting Systems DS 5.16 system** against the referenced 2005 VVSG, Dominion Voting Systems declared standards and NY 2022 Election Law requirements, as per "SLI Testing Approach for Dominion Voting Systems DS 5.16".
No modified source code was found that could not be attributed to a listed modification.
No discrepancies were noted.

Additional Source Code Review details can be found in the "NYSBOE Dominion DS 5.16 Source Code Review Test Report" and accompanying documentation.

4.5 Security Source Code Review

SLI has completed the security source code review of the **Dominion Voting Systems DS 5.16** system against the referenced NY Election law, security concerns, and potential vulnerabilities. All findings resulting from the security source code review are included in this report and accompanying documentation.

Review of the findings resulted in determinations of potential vulnerabilities found. One testcase was failed, which was due to an automated review which returned potential vulnerabilities. Manual review of those potential vulnerabilities determined these potential vulnerabilities would be exploitable only by a vendor insider attack.
No open issues remain for this area of review.

Additional Security Source Code Review details can be found in the "NYSBOE Dominion Voting Systems DS 5.16 Security Source Code Review Test Report" and accompanying documentation.

4.6 Security Functional Testing

SLI has completed Security functional testing of the **Dominion Voting Systems DS 5.16** system against the referenced 2005 VVSG and NY 2022 Election Law requirements. All findings are included in this report and accompanying documentation. One documentation discrepancy was noted, D516-38 and was resolved with updated documentation.

20 Functional Discrepancies were noted, D516-4, D516-5, D516-7, D516-8, D516-9, D516-12, D516-13, D516-14, D516-15, D516-16, D516-18, D516-19, D516-20, D516-21, D516-22, D516-23, D516-25, D516-26, D516-29 and D516-34.

All Jira Issue's, except D516-23 and D516-25, are marked as resolved.

Additional detail is included in the "NYSBOE Dominion Voting Systems DS 5.16 Security Functional Test Report", Attachment C - NYS Dominion DS 5.16 Security Jira Issues (CONFIDENTIAL) and accompanying documentation.

End of Master Test Report