2.08 - Democracy Suite® ImageCast® Central System Operation Procedures

Version: 5.13-A::1

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DOMINION VOTING
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CHAPTER 1: INTRODUCTION

1.1 Purpose and Scope

This document describes operation procedures for the ImageCast® Central. It provides all necessary information for the successful operation of the unit, by all support personnel. The intended audience is those who use the unit for pre-election and election preparation, and post-election and central counting activities.

1.2 Relevant Disclaimers

This document may make reference to certain Democracy Suite® functionalities that are not part of the current 5.13-CO campaign and should be disregarded throughout the document.

For a full list of relevant disclaimers, please see the "Relevant Disclaimers" section in the *2.02 - Democracy Suite® System Overview* document.

1.3 Design Responsibility

Dominion Voting is the design authority.

1.4 Patent Status

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

CHAPTER 2: OPERATIONAL ENVIRONMENT

The central scanning facility is one item of the Democracy Suite Data Center facility. For the complete listing of facilities, furnishings, fixtures, and utilities related to the Data Center, please refer to:

- *2.08 - Democracy Suite® EMS System Operations Procedures*

All scanner configurations and their use procedures are further discussed in the *Democracy Suite® ImageCast® Central Installation and Configuration Procedures* document.

2.1 Central Counting Place Requirements for Central Counters

The vendor shall identify all facilities, furnishings, fixtures, and utilities that will be required for equipment operations.

The following facilities, furnishings, fixtures, and utilities are required at the central count location for the operation of the ImageCast® Central scanner:

- Physically-secured for scanning
- Uninterrupted Power Supply (UPS), such as the APC SMC1500 Smart-UPS
- 120 Volt AC power outlet
- Surge protector
- Extension cord, depending on the distance between the AC power outlet and the ImageCast Central device
- Ballot transfer cases for transporting ballots within the location.
- Table to support scanner
- Shelving units or containers or to store unscanned and scanned ballots.
- High-speed (100 Mbps) network infrastructure and cabling (if additional central ballot scan repository/data center is used)

2.2 External Interface Controls

Defines and illustrates procedures to enable and control the external interface to the system operating environment if supporting hardware and software are involved.

Please refer to *2.08 - Democracy Suite® EMS System Operations Procedures*

2.3 Interaction with Other Data Processing Systems

Such information shall also be provided for the interaction of the system with other data processing systems or data interchange protocols.

ImageCast® Central does not interact with external data processing systems. It interacts only with Democracy Suite EMS which does interact with other data processing system and data exchange protocols.

Please refer to *2.08 - Democracy Suite® EMS System Operations Procedures*

NOTE: Any computers used for election operations must be isolated from any connection to the Internet, as well as from any connection to jurisdiction computers that are not used for election operations. The election computing network must be isolated from all other networks.

CHAPTER 3: SYSTEM INSTALLATION AND TEST SPECIFICATION

Prior to the election, the system must be installed and validated as part of acceptance and readiness testing.

Pre-voting, voting, and post-voting functions are all defined as part of the EMS. For these tests, please refer to the following document(s) in the TDP:

- *2.08 - Democracy Suite® EMS System Operations Procedures*

The central scanning platform's installation procedures are fully-outlined in:

- *Democracy Suite® ImageCast® Central Installation and Configuration Procedures*

3.1 Networking ICC Unit(s) with Results Tally & Reporting Application

The setup of the ICC station and the RTR reporting station is simple and straightforward. The ICC station consists of the scanner, a PC workstation, LCD display, keyboard and mouse, and the data cable connecting the scanner to the PC workstation. The RTR reporting station consists of a PC workstation, LCD display, keyboard and mouse. The interface between the two stations is achieved using a standard Ethernet-based Local Area Network connection (either directly using a cross-over cable or with a switch). For larger installations with multiple ICCs and RTR stations, each station can be connected to a server to provide redundant backup and accumulation across multiple ICC workstations. Setups with multiple scanner workstations require the use of a network hub or switch and cannot be achieved with a simple cross-over cable.

3.2 Logic and Accuracy Testing

Formal Logic & Accuracy testing can be performed to ensure that the system has been configured correctly for an election. This is typically performed using a set of ballots for which the correct results are known ahead of time. Such a test set is run through the system to make sure that the results shown by the tabulator agree to those expected.

After Logic & Accuracy Testing has been completed, the system must be reset in order to remove the test results. The system can then be locked away in a secure location until actual election ballots are to be scanned.

NOTE: Any and all tabulation reports for Logic & Accuracy Testing (as well as regular election-day results) must be taken from the Results Tally and Reporting (RTR) software application.

3.3 General Functions

All functions and operations are defined as pre-voting, voting, or post-voting. There are no general functions or capabilities.

3.4 Audit Functionality

For full details on the ImageCast system's audit functions, as required in VVSG Vol. 1 Section 2.1.5, please refer to the following user guides:

- *Democracy Suite® EMS Election Event Designer User Guide*

- *Democracy Suite® EMS Results Tally & Reporting User Guide*

3.4.1 Transparency and Accuracy

Transparency in tabulation methods (hardware, software) is a prerequisite for demonstrating accuracy. Hence, the AuditMark clearly shows the accuracy of the system when compared to the intentions of the voter. The figure presents the ballot image recorded as a permanent audit record with appended ballot fingerprint information, including the central scanning device and its software recognized and recorded from the ballot.

In a central scanning application, each ballot is stored electronically as an image and an interpretation of the ballot. These ballot image audit record entries include the time-and-date stamp. The generation of audit record entries is not terminated or altered by program control, or by the intervention of any person. The physical security and integrity of the record are maintained at all times. The integrity of the audit records is ensured by a signature on the audit record file, see *2.06 - Democracy Suite® System Security Specification* for more details on signature and encryption methods.

Using EMS Results Tally & Reporting, ballot images can be inspected using different filtering mechanisms:

- Audit all ballots from the given poll/ward area.

- Audit all ballots which match certain criteria - blank, overvoted, undervoted, etc. These criteria attributes can be combined with poll/ward information.

- Audit ballots that require adjudication.

These ballot image audit records can be printed using the EMS Results Tally & Reporting application. As per VVSG Vol. 1 requirements, this printing procedure meets the following:

- Generating audit trail records does not interfere with the production of output reports.

- Entries can be identified so as to facilitate their recognition, segregation, and retention.

- Audit record entries are kept physically secure.

Scanning results are stored either locally or on the shared network drive, depending on the configuration of the system. In most cases, the default configuration will store results on the NAS network share directory. However, if results are stored locally, they can be found on the Dell PC HDD, which is 500GB or larger. Results will be retained for a period of at least 22 months as per manufacturer specifications.

Using this approach, a complete process of image acquisition and recording of corresponding results (votes) can be verified.

3.4.2 Removable Memory

There are no removable memory devices deployed in the ImageCast$^{®}$ Central system unless your jurisdiction desires to manually upload results files to the EMS Results Tally & Reporting application using a USB flash drive.

3.4.3 Permanent Printed Reports

The following reports are printed via the network printer.

3.4.3.1 Diagnostics Report

During diagnostics, the printer produces a record of each test performed by the user. It also provides the ability to produce multiple records.

3.4.3.2 Zero Report

The zero report is a results report that shows that there are no ballots yet cast in the election. The report lists:

- Election name and details

- Date and time of when the report was generated

- All candidates and the number of votes they each received by precinct. (The order in which candidates appear is defined by the DCF options set in the EMS System.[1]

Dominion recommends that these reports, once printed, be kept in a physically secure location for a period of at least 22 months.

1.

3.4.3.3 Audit Log File

Every action, event, and operation that occurs on a ImageCast® Central is permanently logged to an audit file that exists on the host workstation and the host results server. This file can be found in the project folder - C:\dvs\project\log.

All audit record entries include a time-and-date stamp. The generation of audit record entries is terminated or altered by program control, or by the intervention of any person. The physical security and integrity of the records are maintained at all times.

The Audit Log can be printed using the EMS Results Tally & Reporting system. Dominion recommends that this log, once printed, be kept in a physically secure location for a period of at least 22 months.

As per VVSG Vol. 1 requirements, this printing procedure meets the following:

- Generation of audit trail records does not interfere with the production of output reports.
- Entries can be identified to facilitate their recognition, segregation, and retention.
- Audit record entries are kept physically secure.

3.4.4 Post-Election Audit Functionality (AuditMark)

For each ballot that is scanned, interpreted, and accepted into the unit, a corresponding AuditMark is created and stored for auditing purposes. The system uses these images to audit the unit's interpretation of each individual ballot.

The AuditMark image consists of two parts:

- Top part: Contains a scanned image of the ballot (the voter markings are of particular importance).
- Bottom part: Consists of a machine-generated analysis summary showing each mark that the unit interpreted for that particular ballot.

3.4.5 Maintaining Privacy

The system does not make any direct correlations between voters and ballots cast. In addition, the system filters out all ballots containing unusual voting marks and schedules such ballots for adjudication. This includes instances when voters sign the ballots or print their names on the ballots. Such actions may cause the ballots to be rejected from the ballot count.

3.4.6 Uninterrupted Power Supply (UPS) Installation and Use

The approved UPS device is the APC SMC1500 Smart-UPS (900 Watts/1500 VA Input 120V/Output 120-Volt Interface Port USB with Uninterrupted Power Supply). Any UPS used must be capable of providing a minimum of fifteen minutes of uninterrupted power in the event of a power failure.

This will allow for a batch of ballots to complete the scanning process and their results saved in the ICC application. Only ballot batches that have been accepted by a user choosing to accept the batch are saved in ICC and available for later tabulation. Follow the enduser documentation for the UPS to understand any display or audible indications from the UPS that would indicate its status, remaining back-up power level or time, or any faults with the UPS. Be sure to perform a graceful shutdown of both the scanner and ICC workstation prior to the UPS' depletion of power.

CHAPTER 4: USER MANAGEMENT

4.1 Role Definitions

The ImageCast® Central Tabulation application works in conjunction with the scanner hardware in order to form a complete tabulation system. The software performs a number of functions, including controlling the scanner, processing the scanned images to determine voter intent, and creating results files and image files that are passed on to the Results Tally and Reporting software application.

There are three different types of user login, each with different levels of permissions/access to different features. The three types are:

- User Mode
- Administrator Mode
- Supervisor Mode

4.2 User Mode

The user mode allows an operator to scan ballots, accept batches, and deal with scanning errors. User privileges are limited to protect the integrity of the election process. The security level upon launching the application defaults to User or Scanning Mode, see Figure 4-1.
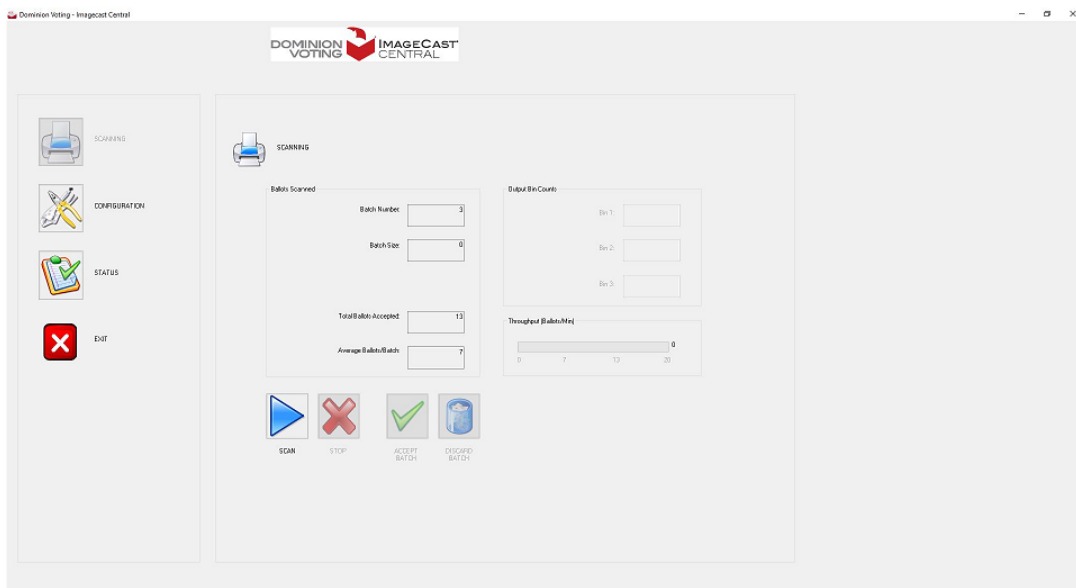

Figure 4-1: Scanning Mode shows basic status and scanning functions.

4.3 Administrator Mode

A number of functions require administrative access. To obtain administrator access, the presiding election official must touch the administrative key to the iButton reader. A large colored "Administrator Mode" icon appears in the bottom left corner of the application and remains there as long as the (authorized) user is admin mode. The Administrator Mode configuration options include resetting, opening, and closing the Tabulator, see Figure 4-2. Administrative functions are accessed using the iButton and iButton reader.
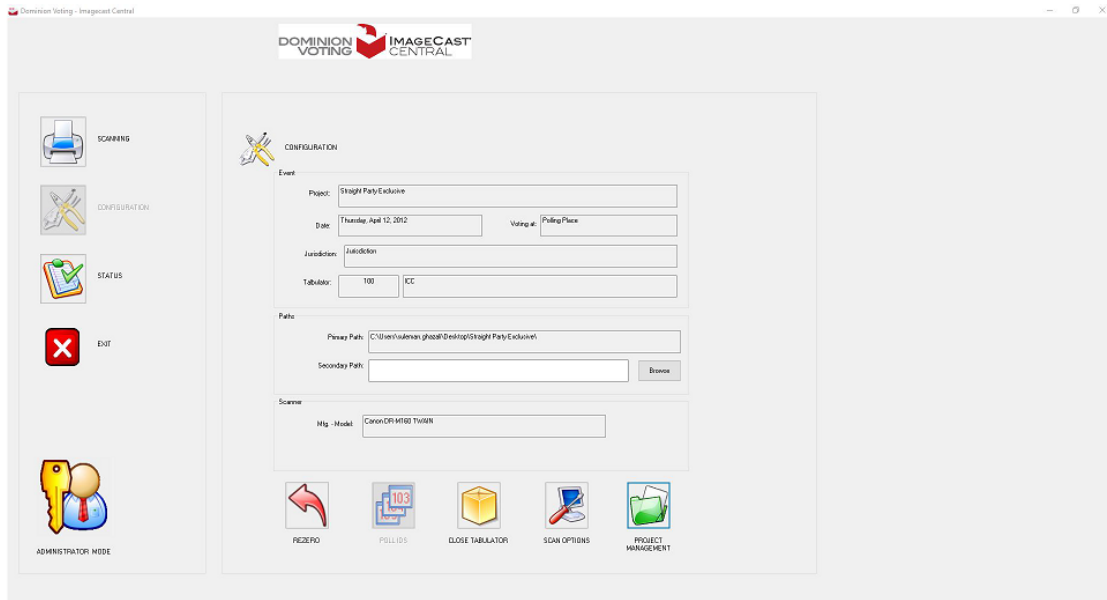

Figure 4-2: The Administrator Mode View

4.4 Supervisor Mode

Supervisor mode is a high-level mode reserved for technicians authorized by Dominion Voting Systems. Access to the functions in Supervisor Mode is restricted by a password maintained by Dominion. Functions include pre-configuration parameters, debug level tools for troubleshooting, and technician-specific functions used internally to monitor the tabulator's status and health during service cycles.

In order to access Supervisor mode:

1. From the bottom left corner of the ICC main window, click the **Administrator Mode** icon.
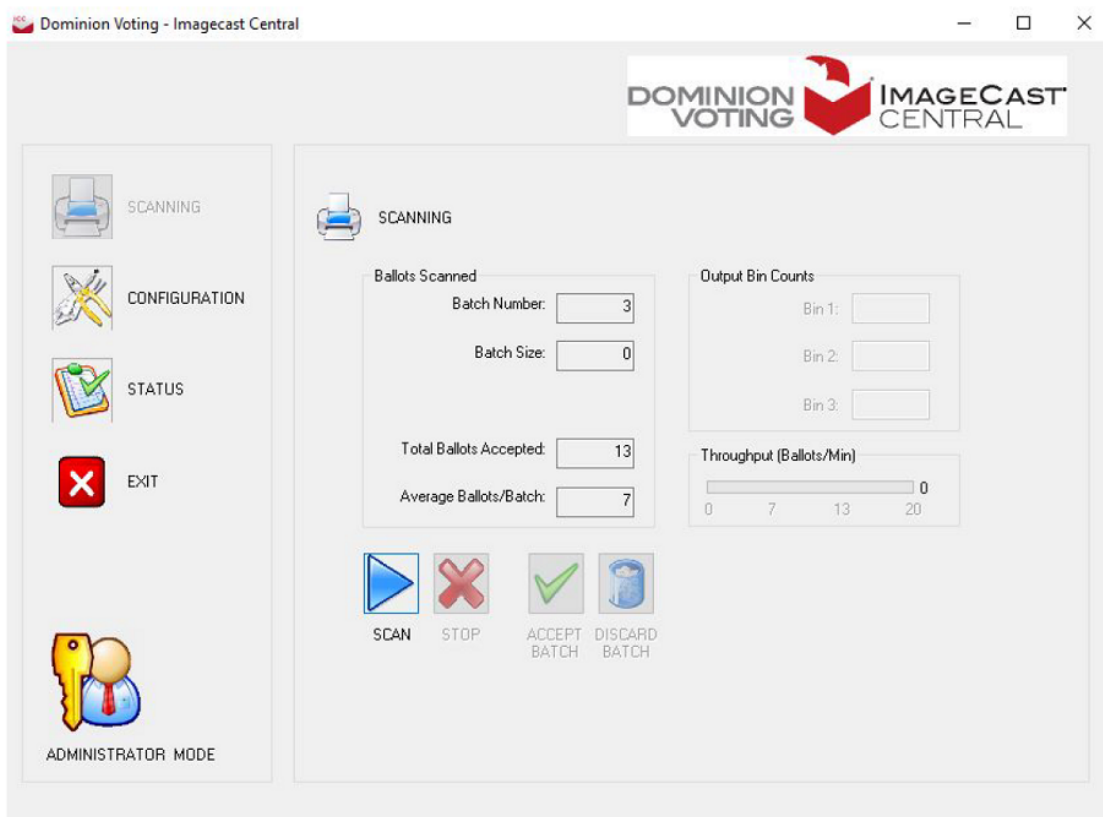   A Security Password dialog appears, see Figure 4-3.

Figure 4-3: Administrator Mode

2. In the Password field, type the password provided by Dominion Voting.

3. Click OK.
   The **Supervisor Mode** screen appears, see Figure 4-4.
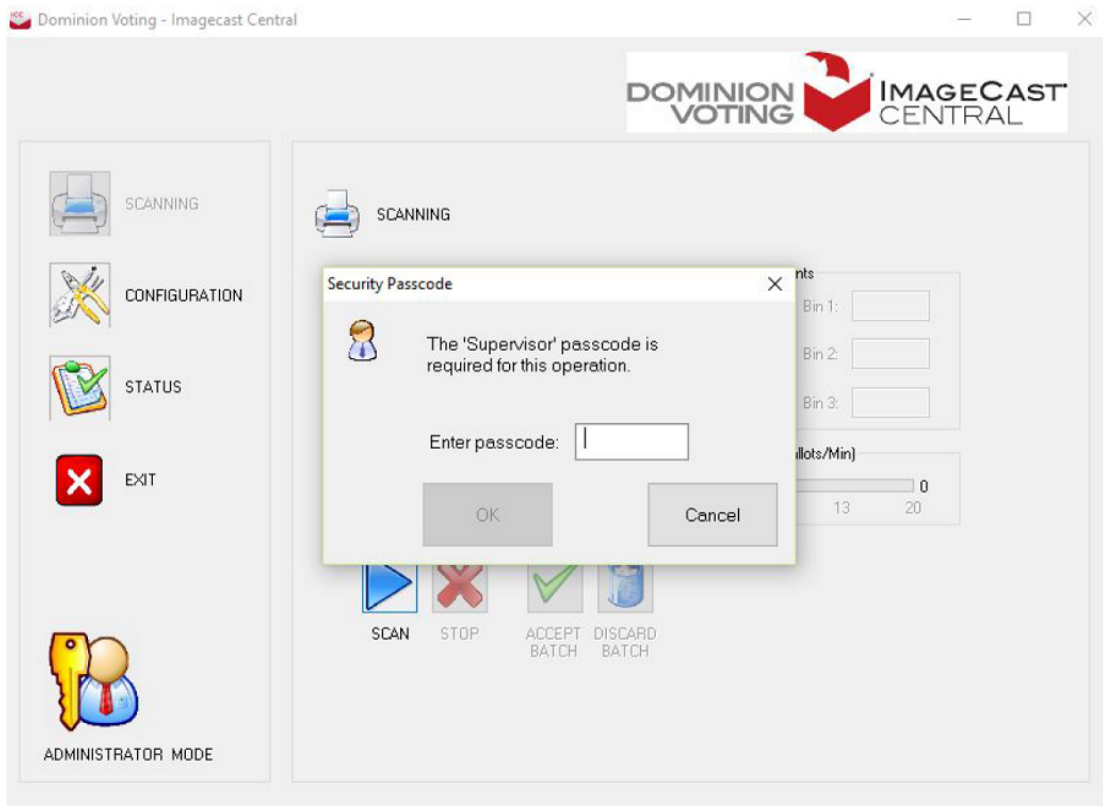   The **Administrator Mode** icon is replaced with the **Supervisor Mode** icon.

Figure 4-4: Supervisor Mode Security Password Dialog

To return to Administrator Mode:

1. Click the **Supervisor Mode** icon, see Figure 4-5.
   The Administrator Mode screen appears.
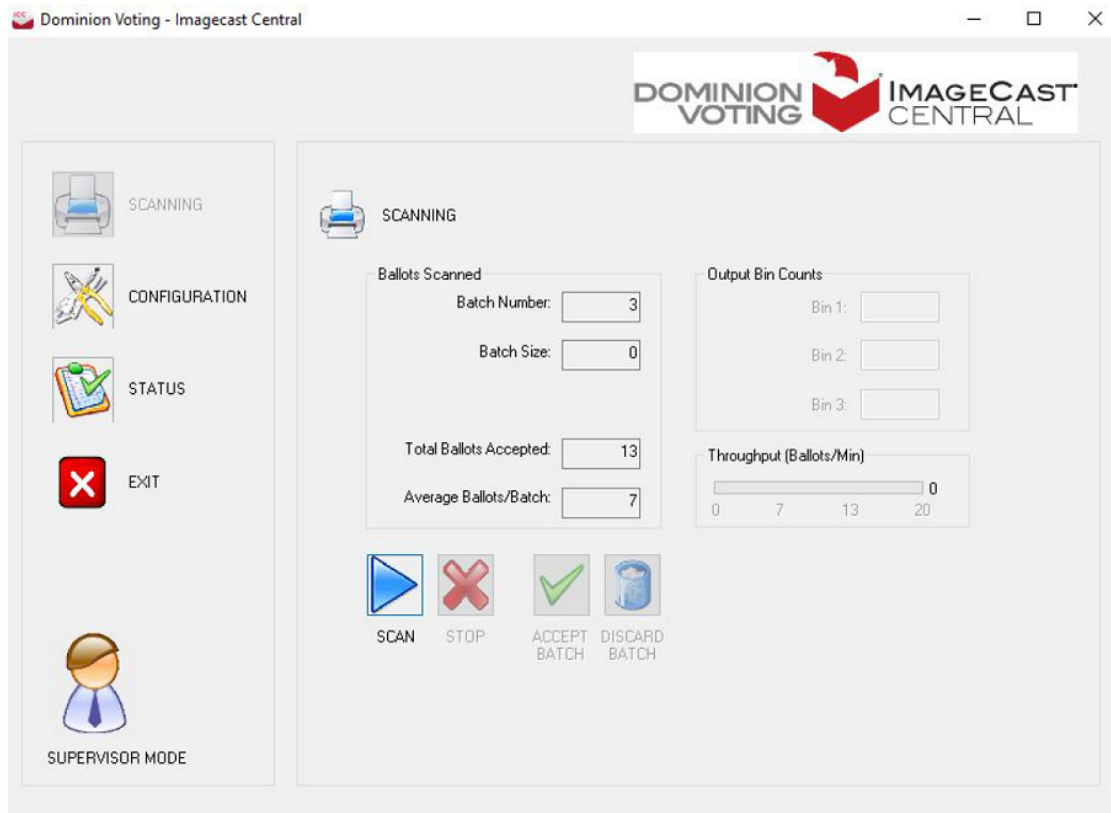   The **Supervisor Mode** icon is replaced with the **Administrator Mode** icon.

Figure 4-5: Supervisor Mode

4.5 Decision Criterion and Conditional Operator Functions

If the ImageCast® Central scanner is malfunctioning, the failure recovery process is to attempt to repair the unit via the troubleshooting procedures in this document as well as in the User and Reference Manuals provided by the scanner's manufacturers. If those procedures do not restore the unit, then it is replaced with a spare. When the replacement unit is powered up, it resumes operation where the original unit left off. Under the care of an authorized technician, the unit can be repaired as required.

CHAPTER 5: OPERATIONS SUPPORT

The vendor [Dominion Voting Systems] shall provide documentation of system operating procedures that meets the following requirements:

- Defines the procedures required to support system acquisition, installation, and readiness testing. These procedures may be provided by reference if they are contained either in the system hardware specifications, or in other vendor documentation.

  - The central scanning devices perform a set of diagnostic tests after every power on/off cycle. At the end of the diagnostics process, the system generates a report with the system status information.

  - For network applications and user interfaces, Democracy Suite® EMS Results Tally & Reporting has the ability to generate a zero state report before the system is utilized. This report extracts all the relevant counters from the database which should be zero before the central scanning process is started. Electoral officers can use this report not only to check that all candidates have no votes, but also to check that the lists of elections and associated candidates are correct.

  - The EMS system also executes a security report which creates a list of all terminals, workstations, central scanning devices and all authenticated operators within the system.

- Describes procedures for providing technical support, system maintenance and correction of defects, and for incorporating hardware upgrades and new software releases.

  - For technical support issues related to the Dominion Democracy Suite system, please contact the Dominion Voting Systems helpline at:
    1-866-564-VOTE (8683)

  - Contact our head office directly at:
    Dominion Voting Systems
    1201 18th Street, Suite 210
    Denver, CO 80202
    Email: help@dominionvoting.com
    Website: www.dominionvoting.com

  - For instructions related to hardware upgrades, please contact Dominion Voting Systems at the address above, and instructions for specific hardware upgrades will be provided, as required.

- For information related to new software releases, please refer to the release notes accompanying the specific software release.
- For additional information, please contact Dominion Voting Systems at the address above.

The procedures for the operator to intervene in ImageCast® Central system operations for recover from an abnormal system state are listed below:

1. Note the characteristics of the system's abnormal state.

2. Call the technical support hotline provided by the jurisdiction for that election event.

3. Relate the abnormal state to technical support personnel over the hotline.

4. Follow instructions of technical support personnel (instructions may include being informed that a technician is being dispatched to the site).

Dominion Voting Systems recommends that one spare unit be kept at the central count facility for repair purposes during periods of system operation.

Dominion also recommends that one technician for every central count facility or remoteImageCast® Central installation be available to support repair calls during system operation. Field Technicians can be Dominion staff, but third party staff or jurisdiction staff can attain accreditation by taking training courses offered by the Dominion Voting.

5.1 ISIS Error Recovery

It is possible that, during scanning, an error message will pop up with error code 920393, and the message Unknown ISIS error. This error is not generated by the ICC application, but rather indicates a problem with the scanner interface, or the scanner itself.

To resolve this issue, perform the following steps:

1. Delete the batch, so that it can be rescanned again afterwards.

2. Shut down the ICC application. This will also close the scanner interface.

3. Power cycle the scanner.

4. Once the scanner is powered back on, open the ICC application.

5. Rescan the aforementioned batch.

If this error occurs repeatedly, contact Dominion Voting Systems for technical support. Such errors may indicate that the scanner requires servicing.

CHAPTER 6: OPERATIONAL FEATURES

Please refer to:

- *2.02 - Democracy Suite® System Overview*

- *ImageCast® Adjudication User Guide*

- *Democracy Suite® ImageCast® Central User Guide*

CHAPTER 7: OPERATIONAL PROCEDURES

Please refer to:

- *2.02 - Democracy Suite® System Overview*

- *ImageCast® Adjudication User Guide*

- *Democracy Suite® ImageCast® Central User Guide*

APPENDIX A: ACCEPTANCE TEST PROCEDURES

A.1 Pre-Voting Functions: Acceptance Testing

1. Acceptance testing for the ImageCast® Central scanner is simply a matter of confirming that the physical and electromechanical components are functioning properly and have not been damaged during transport, and that certain internal parameters have been programmed correctly. Performing this test will ensure the integrity of the installed firmware within the voting machines. It should be performed prior to each election and initially for customer acceptance testing. To perform acceptance testing, the supervisory election official or designee must complete the following steps:

2. Unpack the ImageCast® Central scanner and place it on the desired workstation surface.

3. Attach the cabling from the scanner to the PC workstation.

4. Plug the scanner and the PC workstation into a suitable 120V AC power source.

5. Power up the scanner and PC workstation.

6. Log onto the computer.

7. Refer to the scanner driver installation document for your ICC scanner brand/model to ensure that menus and parameters are set properly. Be sure to save these settings as a profile. If the ImageCast® Central profile has been provided, and the settings match, then there is no need to re-create or re-save the profile. Simply use the one provided.

8. More extensive diagnostic tests and procedures are contained within the product documentation and can be conducted by authorized technical staff.

A.2 Voting Functions

Once the system has been fully configured, and the first set of actual election ballots has been received from the printer, the jurisdiction will need to conduct formal Logic and Accuracy testing. This testing will confirm that the system has been correctly configured and that all components are functioning properly. This process is described below.

NOTE: Detailed Logic and Accuracy testing procedures may vary from one jurisdiction to the next. The procedures outlined in this document are suggestions only, and the applicable laws and regulations of the jurisdiction must ultimately determine the specific testing process to be followed. This testing should be performed prior to every election.

A.2.1 General Acceptance Test and Logic and Accuracy Testing

In general, Logic and Accuracy testing consists of the following basic steps:

1. Configure the election system using EMS Election Event Designer. Refer to *Democracy Suite® EMS Election Event Designer User Guide*, *2.03 - Democracy Suite® EMS Functionality Description*, and *2.08 - Democracy Suite® EMS System Operations Procedures* for details.

2. Generate test ballots, either manually from unmarked ballots, or automatically using EMS.

3. If using unmarked ballots, mark a number of election ballots in pre-determined ways to create what is referred to as a test deck. This deck of ballots should be created for each ballot style and tabulator. A control sheet that summarizes the total results for the test decks.

4. Alternative, use the Automated Test Deck application. This application, available from Dominion Voting if allowed in your jurisdiction, can automatically generate the appropriate test decks and expected results totals.

5. Run the appropriate test deck through each of the ImageCast® Central scanners in the system.

6. Close the polls and inspect the results tapes to ensure that the results are correct for each ImageCast® Central tabulator.

7. Upload the results files from each of the tabulators into the EMS Results Tally & Reporting application. Refer to *Democracy Suite® EMS Results Tally & Reporting User Guide*, *2.03 - Democracy Suite® EMS Functionality Description*, and *2.08 - Democracy Suite® EMS System Operations Procedures* for details.

8. View a set of "audit marked" images for each of the ballot styles in order to confirm that the system is interpreting each type of ballot correctly.

9. NOTE: It is not necessary to view the images of all of the ballots used during testing. At minimum, however, a set of images should be viewed from one complete test deck that includes each of the different ballot styles that will be used in the election. Refer to *2.03 - Democracy Suite® EMS Functionality Description* for details on the EMS component of Logic and Accuracy testing.

10. If any vote discrepancies or errors are encountered during this process, review the ballots and the procedure, as human error is the most likely cause. Once the problem has been corrected, repeat the entire Logic and Accuracy testing procedure for the affected tabulator(s).

11. If there are no errors or discrepancies, sign and date the appropriate forms, along with the test decks, as part of the test documentation records for the election.

12. Purge the system of test results once testing is complete. Once testing is complete, the entire system must be purged prior to using it for the election. This includes purging data from each individual memory card, and purging the Results Tally & Reporting database. Once the system has been purged, a zero report must be printed in order to confirm that the system was successfully purged. Save these files as part of the permanent audit record.

13. Retain all documents and supplies used during the testing process. Place all documentation in envelopes and/or boxes. Seal, initial and date the envelopes and/or boxes, as applicable.

1. Secure equipment until Election Day. Once the testing is complete, the equipment must be securely stored so that it is safe from unauthorized access or use.

REVISION HISTORY

Rev.	Date	Summary
1	04-28-2022	Branched for 5.13-A

VVSG 1.0 Vol II - 2.8.1 1
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