Democracy Suite® Use Procedures

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Please be advised that this document may make reference to the following DemocracySuite® functionalities:

- EMS Express Configuration
- Election Data Exchange Station (EDES)
- Recall Issues
- Mode 2 asymmetric cryptography
- Mode 3 asymmetric cryptography
- Modem and transmission functionality
- AIMS Data Translator
- WinEDSTM Importer
- ImageCast R! Listener
- EMS Results Transfer Manager
- ImageCast® Evolution Dual Monitor functionality
- ImageCast® Precinct
- ImageCast® Precinct Audio
- ImageCast® Precinct Ballot Marking Device (BMD)
- ImageCast® Precinct BMD Audio
- Canon imageFORMULA DR-M160II
- Samsung Galaxy Note PRO 12.2
- Avalue 15.6 inch tablet
- Remote Voting server (RV)

These functionalities are not components of the current DemocracySuite® 5.2-CA certification campaign, and should be disregarded throughout the document.

Table of Contents

1 Introduction

This document discusses Dominion Voting Systems' (DVS) Democracy Suite, release 5.2, platform as outlined in the *Voting System Use Procedures for California Template* .

1.1 System Description and Components

This section defines the System Description and Components as specified by section 1.1 of the *System Use Procedures for California Template*.

1.1.1 ImageCast Evolution (ICE) v. 5.2.16

Figure 1: ImageCast Evolution

ImageCast Evolution Ballot Counter is a precinct-based optical scan ballot tabulator that is used in conjunction with ImageCast-compatible ballot boxes. The system is designed to scan marked paper ballots, interpret voter marks on the paper ballot, and safely store and tabulate each vote made on the ballot. As well, the ImageCast Evolution supports enhanced accessibility voting through optional accessories that are connected to the unit and via the 18.5″ LCD touchscreen.

Once an accessible voting session has been activated, the Voter inserts a blank ballot and makes their selections using the Audio-Tactile Interface (ATI), Paddles, or Sip and Puff devices. When the accessible voting session has been completed, the ImageCast Evolution will mark the ballot according to the selections made in a

manner that renders it indistinguishable from normally printed and hand-marked ballots. This ballot is then scanned back into the ImageCast Evolution for tabulation and deposited into the secured ImageCast ballot box. The ImageCast Evolution 's major system elements are outlined in the following table.

ICE's Major System Elements
Linux Operating System
MPC8347E PowerPC Processor-based Motherboard
Internal type II Compact Flash memory cards
Two optical imaging scanners
18.5″ backlit LCD touch panel
Internal thermal printer
Internal inkjet printer
iButton administrative security key interface
Paper feed mechanism
Ballot diverter
Power supply module
Battery pack
Ballot box
Packaging

1.1.2 ImageCast Central (ICC) v. 5.2.0.0707

ImageCast Central is a commercial off-the-shelf high-speed scanner, coupled with a ballot processing application which runs on a Dell 7440 All-in-One PC workstation. The system is designed for use in a central scanning location, to process vote by mail ballots, or to run and process an entire election. The ImageCast Central's major system elements are outlined in the following table.

ICC's Major System Elements
Windows 10 Pro 64-bit operating system
Intel Core i7 processor (Quad Core, 8 MB, 8 T, 3.4 GHz, 65 W)
8 GB RAM
500 GB hard disk
CDROM/DVD ROM reader
Ethernet port for uploading results files
Dedicated USB port for: • 1-wire iButton Reader • Compact Flash card reader • Scanner

ICC's Major System Elements
Scanner: • Canon DR-G1130 • Canon DR-X10C • InterScan HiPro

1.1.3 Election Management System (EMS) v. 5.2.17.1

EMS Server and Workstation

The Democracy Suite Election Management System (EMS) is a set of applications for all pre-voting and post-voting groups of activities used for defining and managing elections. EMS runs on a Dell Precision T3420 work- station and Dell R630 server. The complete EMS software platform consists of client and server applications as follows:

Applications:

- **Democracy Suite EMS Audio Studio:** A supplementary client application used to record audio files for an election project. As such, it is used during the pre-voting phase of the election cycle.

- **Democracy Suite EMS Election Data Translator:** A supplementary client application used to import, edit, and export template election project data into, and out of, Election Event Designer.

- **Democracy Suite EMS File System Service:** A standalone service that runs on client machines to access low-level operating system API for the partitioning of Compact Flash cards.

- **Democracy Suite EMS Data Center Manager:** A system level configuration application used in the EMS back-end data center configuration.

- **Democracy Suite EMS Application Server:** A server-side application responsible for executing long running processes such as rendering ballots, generating audio and election files, etc.

- **Democracy Suite EMS Election Event Designer:** Integrates election definition functionality and represents a main pre-voting phase enduser application.

- **Democracy Suite EMS Results Tally & Reporting:** Integrates election results acquisition, validation, tabulation, reporting, and publishing capabilities, and represents a main post-voting phase enduser application.

- **Democracy Suite ImageCast Adjudication:** A set of server-side services and a client-side application that allow adjudication of ImageCast Central ballot images.

Data Repositories:

- **Democracy Suite EMS Network Attached Storage (NAS) Server:** A server-side file repository of the election project file-based artifacts, such as ballots, audio files, reports, log files, election files, etc.

- **Democracy Suite EMS Database Server:** A server-side RDBMS repository of the election project database that holds all pre-voting and post-voting election project data.

1.1.4 ImageCast X (ICX) v. 5.2.6333.10249

ImageCast X

ImageCast X is based on a commercial off-the-shelf Android device and a compatible printer. Android device is running a BMD application in KIOSK mode. The system is designed for use on a polling location, to produce marked ballots that can be scanned using an ICC or ICE device. The ImageCast X 's major system elements /specifications are outlined in the following table.

ICX's Major System Elements
Android 4.4.4
Intel(R) Atom(TM) CPU Z3735F @ 1.33 GHz
2 GB RAM
32 GB solid state disk
ACOS Smart Card Reader
Printer: • HP LaserJet Pro 402dne or   • HP LaserJet Pro 203dw
Dedicated USB port for: • USB stick with election files   • Smart Card Reader

ICX's Major System Elements
• Printer • AVS device
Battery and UPS for standalone operation

1.2 Terms and Definitions

- **Absentee Ballot**: EAC 2005 definition: Ballot cast by a Voter who is unable to vote in person at their Polling Place on Election Day.

- **Accessible Voting Session (AVS)**: A method of voting for voters who are unable to easily mark their paper ballot. Audio, visual, and tactile interfaces are used in any voter-preferred combination to navigate and mark a ballot.

- **Accuracy Test**: Consists of tabulating a known number of ballots, with a known pattern of voted positions, into the Election Management System to ensure its accuracy. This test is used to verify that the election project set-up, the production of the ballots, and the vote tallying hardware are operating correctly.

- **Adjudication:** The process of examining voted ballots to determine, and, in the judicial sense, adjudicate voter intent. The application used for this purpose is primarily ImageCast Adjudication.

- **Application Server (APPS)**: A server-side application responsible for executing long-running processes such as rendering ballots, generating audio and election files, etc.

- **Audio Studio (AS)**: A supplementary pre-voting user application used to review, record and import audio files for an election project.

- **Audio Tactile Interface (ATI)**: A handheld controller that allows a voter who is unable to easily mark their paper ballot, to navigate and make selections to a ballot that is presented in audio and visual form during an Accessible Voting Session.

- **Audit Trail**: EAC 2005 definition: Recorded information that allows Election Officials to review the activities that occurred on the voting equipment, to verify or reconstruct the steps followed without compromising the ballot or Voter secrecy.

- **Backup**: Equipment and procedures available in the event of failure of the voting system.

- **Ballot**: EAC 2005 definition: The official presentation of all of the contests to be decided in a particular election.

- **Ballot Box**: A secure ballot storage container where tabulated ballots are automatically deposited once scanned through an ImageCast tabulator.

- **Ballot Counter**: EAC 2005 definition: Process in a voting device that counts the votes cast in an election.

- **Ballot Definition**: EAC 2005 definition: Information that describes to a voting machine the content and appearance of the ballots to be used in an election.

- **Ballot Definition Subsystem**: Includes all hardware, software, and manual procedures required to accomplish the following:

    - Administrative Activities

    - Candidate and Contest Definition

    - Voter Registration Databases Management

    - Ballot Generation

    - Election Programming

    - Ballot Printing/Display

    - Ballot Validation

- **Ballot Image**: EAC 2005 definition: An electronically produced record of all votes cast by a single Voter.

- **Ballot Layout**: The ballot configuration unique to each precinct or split precinct that encompasses all candidates, including any rotation of candidate names, and ballot measures for facing Voters at that election.

- **Ballot Style**: EAC 2005 definition: A particular set of contests to appear on the ballot for a particular election district, their order, the list of ballot positions for each contest, and the binding of candidate names to ballot positions.

- **Ballot Subset**: Portion of a ballot that a particular Voter is eligible to vote on. The subset (e.g. a precinct ID) is selected prior to the Voter making selections.

- **Ballot Tabulation**: Process of totaling, or tallying votes.

- **Ballot Write-In Voting Position**: For selected offices on the ballot, immediately below the space on which the last candidate's name is printed or displayed, space is available for the voter to write-in the name of a candidate not listed on the ballot and mark its voting position.

- **Blank Ballot**: A ballot on which there are no voting position marks that can be read by the voting system.

- **Candidate**: EAC 2005 definition: Person contending in a contest for office. A candidate may be explicitly presented as one of the choices on the ballot or a Write-In candidate.

- **Canvass**: EAC 2005 definition: Compilation of election returns and validation of the outcome that forms the basis of the official results by the political subdivision.

- **Central Count System**: EAC 2005 definition: A voting system that tabulates ballots from multiple precincts at a central location. Voted ballots are placed into secure storage at the polling place. Stored ballots are transported /transmitted to a central counting place which produces the vote count report.

- **Central Counting Location**: The place where the following operations occur:

    - Tabulate ballots or accumulate the results of previously tabulated ballots at one or more Central Counting Locations.

    - Merge the voting data produced by dissimilar voting systems.

    - Program or reprogram ballot-tabulating devices after Opening the Polls.

    - Edit Vote Tally programs or voting data.

- **Certification Message**: A message, followed by signature lines, which may be printed on reports attesting that the statistics and results are true to the best of the Precinct Board's/Central Count Operator's knowledge.

- **Contest**: EAC 2005 definition: Decision to be made within an election, which may be a contest for office or a referendum, propositions and/or questions. A single ballot may contain one or more contests.

- **Contest Headers**: Space on the displayed ballot image where the contest name is shown.

- **CPU (Central Processing Unit)**: Commonly used abbreviation to describe the Central Processing Unit of a computer or computer system as distinguished from other peripheral devices or components.

- **Cumulative Voting**: EAC 2005 definition: A method of voting exclusive to multi-member district election (e.g. county board) in which each Voter may cast as many votes as there are seats to be filled and may cast two or more of those votes for a single candidate.

- **Demonstration Ballot**: Ballot, used for Demonstration purposes, which displays a mock election. Such ballots may be used and re-used for demonstrations from Voter to Voter and from election to election.

- **Device Configuration File (DCF)**: The file that holds configuration parameters as defined by EMS applications and passed onto the ImageCast tabulator during an Election.

- **Diagnostic Messages**: Appropriate message printed by the election log, under certain conditions, which indicates a problem or condition, as well as the recovery procedure. Such messages are Tracking Points in the audit trail.

- **Election**: EAC 2005 definition: A formal process of selecting a person for public office or of accepting/rejecting a political proposition by voting.

- **Election Coding**: EAC 2005 definition: Process by which Election officials or their designees using voting system software to logically define the ballot for a specific election.

- **Election Cycle**: Represents all activity required to conduct an election. Comprised of the following election phases:
    - Pre-election: Includes all preparation activities occurring before Opening the Polls.
    - Election Day: Includes all activities occurring during the election, including Opening the Polls, official Election, and Closing the Polls.
    - Post-Election: Includes all activities occurring after Closing the Polls.

- **Election Database**: Database created for each election that defines the appropriate election parameters, attributes and other election-specific information.

- **Election Day**: Election phase, which allows for official ballots to be cast, during the official Election. Includes all activities occurring during the following sub-phases:
    - Opening the Polls
    - official Election
    - Closing the Polls

- **Election Definition Cycle**: The step-by-step processes used to program and prepare an election using the Democracy Suite Election Management System's set of applications.

- **Election Definition Files**: A term used to collectively describe both Device Configuration and Voter Information Files, which are stored on Compact Flash cards within the ImageCast series of tabulators.

- **Election Event Designer (EED)**: The primary pre-voting end user application used to define, design, and program an Election Event.

- **Election Management System (EMS)**: A set of applications for all pre-voting and post-voting activities accomplished in the process of defining and managing an election. These applications include Election Event Designer, Results Tally & Reporting, Audio Studio, Election Data Translator, Results Transfer Manager, Adjudication, Application Server Manager and Data Center Manager.

- **Election official (EO)**: Applies to the County Clerk, the County Registrar of Voters, the City Clerk, or any other person who has been properly and legally charged with the responsibility of conducting the election. They may deputize others to perform functions.

- **Election Programming**: EAC 2005 definition: Process by which Election officials or their designees use voting system software to logically define the ballot for a specific election.

- **Election Stage**: Individual operational activity, which occurs within an election phase. Several election stages make up an election phase. Some election stages are required, others are optional.

- **Electronic Mobile Ballot (EMB)**: A ballot produced by the Ballot Marking Device (BMD).

- **'Famous Names' Ballot**: A mock election ballot carrying fictitious offices and candidates who are familiar with history. This ballot is intended for use not only as a demonstration item but also as an Accuracy Test. Also known as an 'Ice Cream' Ballot, where flavors of ice cream are listed as Voter selections.

- **ImageCast Adjudication:** The application that is used to examine ballots scanned predominantly by the ImageCast Central (ICC) to adjudicate them.

- **ImageCast Central (ICC)**: A central ballot scan tabulator coupled with a ballot processing application, which is primarily used to process absentee ballots.

- **ImageCast Evolution (ICE)**: A precinct voter-fed paper ballot tabulator with an integrated inkjet ballot marking device and touchscreen.

- **ImageCast X (ICX)**: A precinct Ballot Marking Device with laser printer.

- **iButton Security Key**: A computer chip enclosed in a 16mm-thick stainless steel capsule, used as an Administrative Security Key for accessing secured menus within the Democracy Suite set of products and applications.

- **Initialization**: Process of returning a computer to its original state when the program was first to run, by returning all counters to zero or their starting values.

- **Local Election official (LEO)**: The individual or officer of a local governmental unit responsible for certifying candidates and issues to be placed on the ballot.

- **Logic and AccuracyTest**: Tests which must be run before and after processing official ballots for an election. The logic test group of ballots has predetermined totals for all contests on the ballot, with every candidate in a contest receiving a different number of votes than any other candidate in that contest.

- **Machine Behavior Settings (MBS)**: The settings that hold configuration parameters as defined by EMS applications and passed onto the ImageCast Evolution. These settings define and determine the behavior of the ImageCast Evolution during an election.

- **Maintenance Diagnostics**: Series of software and hardware tests and system utilities that allow for troubleshooting and setting system parameters.

- **Network**: An interconnected system of transmission lines that allows the following to communicate with each other:
    - Computers
    - Terminals
    - Peripheral Devices
    - Similar types of equipment

- **Network Attached Storage (NAS)**: A server-side repository used for storing files and data related to the election cycle.

- **Non-Partisan Offices**: EAC 2005 definition: Elected offices for which candidates run without political party affiliation.

- **Official Canvass**: Consists of the post-election processing of all valid Vote-By-Mail (VBM), write-in, and provisional ballots, an audit of the counting process, and reporting of final results to the Secretary of State (SOS).

- **Official Election**: Election Day sub-phase, when Voters cast official ballots for their candidate choices.

- **Open Primary**: EAC 2005 definition: Primary Election in which any Voters, regardless of political affiliation, may participate. Some states require Voters to publicly declare their choice of party ballot at the Polling Place, after which the Poll worker provides/activates the appropriate ballot. Other states allow the Voters to make their choice of party ballot within the privacy of the voting booth.

- **Opening the Polls**: Election Day sub-phase, which allows for Opening the Polls, for the official Election sub-phase.

- **Overvote**: EAC 2005 definition: Voting for more than the maximum number of selections allowed in a contest.

- **Overvoted Ballot**: A ballot where the Voter has voted for more than the allotted number of candidates for one or more offices being contested.

- **Paddles**: Hand or foot-operated switches attached to the ATII. Paddles are used to navigate and make selections to the ballot during an Accessible Voting Session.

- **Partisan Offices**: EAC 2005 definition: Elected offices for which candidates run as representatives of a political party.

- **Post-Election**: Election phase, which includes all activities occurring after Closing the Polls.

- **Post-Election LAT (Logic and Accuracy Tests)**: Optional Post-Election function, which includes post-election Logic and Accuracy Tests, for ballot verification and public oversight of ballot integrity.

- **Pre-Election**: Election phase, which includes all activities occurring before Opening the Polls.

- **Pre-Election LAT (Logic and Accuracy Tests)**: Pre-Election function, which includes mandatory Logic and Accuracy Tests, which are performed during Pre-Election, for electronic verification and public oversight of ballot integrity.

- **Precinct Count System**: EAC 2005 definition: A voting system that tabulates ballots at the Polling Place. These systems typically tabulate ballots as they are cast and print the results after the close of polling. For DREs, and for some paper-based systems, these systems provide electronic storage of the vote count and may transmit results to a central location over public telecommunications networks.

- **Printer (thermal)**: System component that is used to produce reports of the Vote Tally.

- **Protective Counter**: A function of the ballot tabulator, which includes a counter that records the number of all of the ballots tabulated since the device was built.

- **Provisional Ballot**: EAC 2005 definition: Ballot provided to individuals who claim they are eligible to vote but whose eligibility cannot be confirmed when they present themselves to vote. Once voted, such ballots are not included in the tabulation until after the Voter's eligibility is confirmed.

- **Provisional Voting**: EAC 2005 definition: Ballot provided to individuals who claim they are eligible to vote but whose eligibility cannot be confirmed when they present themselves to vote. Once voted, such ballots are not included in the tabulation until after the Voter's eligibility is confirmed. In some jurisdictions called an Affidavit Ballot.

- **Public Counter**: Federal Election Commission (FEC) 2002 definition: Counter in a voting system that counts the ballots cast in a single election or election test.

- **Recall Voting**: Election Assistance Commission (EAC) 2005 definition: Process that allows Voters to remove their elected representatives from office prior to the expiration of their terms of office. The Recall may involve not only the question of whether a particular Officer should be removed but also the question of naming a successor in the event that there is an affirmative vote for the Recall.

- **Results Tally & Reporting (RTR)**: The primary post-voting user application that integrates election results acquisition, validation, tabulation, reporting, and publishing capabilities.

- **Rotation**: EAC 2005 definition: Process of varying the order of the candidate names within a given contest.

- **Secrecy Sleeve**: An envelope or folder of such design and dimensions used to hide the voted ballot to ensure voter's privacy.

- **Semi-official Canvass**: The process of collecting processing, and tabulating ballots on election night. This may include reporting results to the Secretary of State. The semi-official canvass may include some or all of the Absentee vote totals. The semi-official canvass is contrasted with the official canvass which begins no later than the first Thursday following the election and, for statewide elections, must result in final certification 28 days following the election.

- **Sip & Puff**: A pneumatic breath-operated switch attached to the ATI and used to navigate, and make selections to, the ballot during an Accessible Voting Session.

- **Split Precinct**: EAC 2005 definition: A precinct that contains an election district subdivision, e.g., a water district or school board district, requiring an additional Ballot Configuration.

- **Spoiled Ballot**: EAC 2005 definition: Ballot that has been voted but will not be cast.

- **System Proofing**: Procedure which verifies that all materials, files, and programs for an election are correctly prepared. This proofing is normally done in approximately two (2) weeks, during the period consisting of 40 days to approximately 14 days prior to Election Day. Logic and Accuracy tests are included in System Proofing.

- **Test Deck**: A pre-marked stack of ballots which will generate a predictable pattern of results, when scanned into a tabulator programmed for that election project. This deck would be used for Accuracy Testing.

- **Undervote**: EAC 2005 definition: Occurs when:
  - The number of choices selected by a Voter in a contest is less than the maximum number allowed for that contest.
  - No selection is made for a single choice contest.

- **Undervoted Ballot**: A ballot where the Voter has voted for less than the total number of election contests listed on the ballot, or less than the number of positions to be filled for a single office.

- **Virtual Outstack**: A function within the ImageCast Central application where ballots containing voter exceptions (e.g. misread, an overvote, undervote, blank, ambiguously marked ballots), will halt the scanning process and notify the operator which ballot in the batch contains the voter exception.

- **Vote By Mail Ballots**: See **Absentee Ballots**.

- **Vote For**: EAC 2005 definition: A ballot choice in which Voters are allowed to:
  - Vote for a specified number (N) of candidates
  - Vote in a multi-seat (M) contest

- **Voted Ballot**: EAC 2005 definition: Ballot that contains all of a Voter's selections and has been cast.

- **Voter Information Files (VIFs)**: Election information including, but not limited to, ballot layouts, contests, and candidate names, that are stored on the Compact Flash cards within the tabulator.

- **Write-In**: EAC 2005 definition: To make a selection of an individual not listed on the ballot. In some jurisdictions, Voters may do this by:
  - Using a marking device to physically write their choice on the ballot
  - Using a keypad, touchscreen, or other electronic means to enter the name.

- **Write-In Ballot**: A ballot where a vote has been cast in a race for a candidate whose name does not appear on the ballot.

- **Write-In Candidate**: Optional candidate type used to provide a means to the Voter to write the name of a candidate whose name does not appear on the ballot.

2 Ballot Printing Specifications

Ballot layout for all Democracy Suite products is accomplished in the Election Management System Election Event Designer application during the election definition process. Ballots are generated as tabulator-ready PDF ballot artwork files.

2.1 Ballot Artwork Source Files

Dominion's Democracy Suite Election Management System (EMS) creates tabulator-ready PDF ballot artwork files. Ballot artwork files are created as complete ballot images, without trim lines or crop marks, and are designed to directly print on digital 4-color sheet-fed xerographic or other electrophotographic printers (most B-sized laser printers). Ballot artwork is generated in industry-standard PDF Version 1.3 and CMYK color space.

Ballot artwork files are full-sized press-ready ballots containing all required ballot elements and the unique ballot ID barcode that distinguishes each ballot style. Each file contains one or two ballot images: a front image (if the ballot is single-sided) or paired front and back ballot images. All fonts used in the ballot artwork are embedded in the PDF file. Ballot artwork files are digitally-signed (X.509) and tied to the election project files produced by Democracy Suite EMS to allow for authentication and revision control. The file naming scheme used for the ballot artwork files is set in Democracy Suite EMS and is controlled by the election administrator. Typical file names might be as simple as "1.pdf " or be as descriptive as "ballot 4324 A01 B EP 20100912 0.pdf ". An election administrator will provide a list of the ballot artwork file names and usage.

Pre-press imposition of ImageCast ballot artwork to add crop or alignment marks, jurisdiction-mandated background screens, stub artwork, or other printing, may be required. No modifications, post-processing, or image conversion of the original ballot artwork files is allowed.

2.2 Ballot Printing Methods

ImageCast ballots can be easily printed by a range of modern printing technologies.

- Small quantities of tabulator-ready ballots can be printed with a conventional B-size laser printer (600 dpi min., pre-calibrated), directly onto pre-cut blank ballot stock. ImageCast ballot artwork files are pre-configured for this use. In-house laser printing of ImageCast proofing and test ballots allows a jurisdiction to quickly and easily test the Democracy Suite EMS election project setup and tabulation options.

- Most jurisdictions choose a Dominion-certified print vendor to produce the ballots that will be used for their election. ImageCast ballots are often produced by conventional web or sheet-fed offset lithographic presses.

- High-speed digital xerographic or other electrophotographic presses (both web and sheet-fed) hav also been used to produce ImageCast ballots.

- Ink jet printers, from small desktop units to high-speed web print engines, have produced millions of ImageCast ballots.

2.3 Ballot Stock Selection

ImageCast ballots are printed on high-quality, dimensionally stable, opaque text and cover paper from selected manufacturers. As a result of the high precision required in ballot scanning and vote tabulation, Dominion only recommends ballot stock that has been tested to have a low dirt content and low numbers of imageable defects for ImageCast ballot production. Approved paper stocks are still subject to additional inspection on a lot-by-lot basis for dirt and other defects in the paper that may be imaged by our tabulators. A range of paper weights (basis weight or grammage) can be used, depending upon the type of ballot being printed and the ImageCast tabulator used.

Ballots marked by voters at the polls and hand-fed into tabulators are usually printed on heavier weight cover or text stocks. Ballots designed for mail distribution are often printed on lighter weight stocks. The election administrator may indicate a preference for varying the weight of the stock for the different types of ballots, or the entire election may be printed on a single weight of paper. Multiple paper weights do not pose problems for the tabulator so long as the weight is an approved ImageCast commercial ballot paper.

Ballot stock is available in both rolls and sheets, and comes in a variety of sizes to accommodate the different ballot printing technologies and presses. If the selected presses or finishing equipment are limited to certain paper stocks, please inform the election administrator before bidding. Most ImageCast ballots are printed on approved #100 opaque text or #65 opaque cover stocks. This yields a dimensionally-stable ballot card that is durable, easy to print, and widely accepted by voters.

2.4 Approved Ballot Paper Stocks

The text and cover paper stocks that have been tested and approved for manufacturing ImageCast ballots are listed in the table below.

All approved ballot stock is white, bright white, or natural colored paper and has a smooth finish. Color-coding ballots is normally achieved in the ballot artwork by printing screened area(s) of color as a background as required by California Elections Code section 13002 – *not* by ordering colored ballot stock.

Text and Paper Stocks Approved for ImageCast Ballots

Recycled pulp				
Manufacturer	**Type**	**Weight**	**Color / Finish**	**Recommended Paper**
Cascades Fine Paper	Rolland Opaque 50	80# and 100# Text	Bright White, Smooth Finish	50% Post consumer fiber, EcoLogo, FCS Mixed Sources
Cascades Fine Paper	Rolland Opaque 50	65#	Cover Bright White, Smooth Finish	50% Post consumer fiber, EcoLogo, FCS Mixed Sources
Virgin wood pulp				
Manufacturer	**Type**	**Weight**	**Color / Finish**	**Recommended Paper**
International Paper	Accent Opaque	100# Text	Smooth	FCS Forest Management
International Paper	Accent Opaque	65# Cover	Smooth	FCS Forest Management

Text and paper stocks approved for ImageCast X

Manufacturer	Print Method	Weight	Color / Finish	Recommended Paper
Rolland Enterprises Inc	Toner Based Ballot Production	100# Text	Bright White,	**VoteSecure SL**

Manufacturer	Print Method	Weight	Color / Finish	Recommended Paper
			Smooth Finish	
Rolland Enterprises Inc	Inkjet Ballot Production	100# Text	Bright White, Smooth Finish	**VoteSecure IJ**
Rolland Enterprises Inc	Offset Ballot Production	100# Text	Bright White, Smooth Finish	**VoteSecure SD**

3 Use Procedure Summary

In the period prior to the election, it is necessary to perform several levels of tests, each having a different role in the period leading to the election. This includes:

1. Acceptance Testing - this is a test executed upon receiving the hardware equipment in order to verify that the equipment is in good working order.

2. System Readiness Testing Procedures - this test is run after installing and configuring the whole Democracy Suite system. The goal is to verify that products are configured to run as an integrated system. This test does not require a specific election project (files) and is usually performed on a single ImageCast Evolution and/or ImageCast Central tabulator.

3. **Logic and Accuracy Test** - this test is a rehearsal run prior to an election to confirm everything runs and operates as intended, including the very Election Project that is programmed for that specific election. Therefore, this test is run with actual election files that are going to be used during the election. If successful, the results are backed up and archived, and then that same system, equipment and files are used in an actual election (including CF Cards, applicable Smart Cards, I Buttons, ballots etc.). In this test, every tabulator defined in the election project must be tested.

In addition to the tests listed above, this document describes the Election Day (Period) Use Procedures for running an actual election on the Democracy Suite platform. These steps are similar to the Logic and Accuracy Test procedure, with differences in equipment preparation and handling, backup/restore tasks and similar. The procedure related to the Election period assume that the Logic and Accuracy test was completed and starts from the chapter Post-L & A Preparation for Election Day.

All tests mentioned above are described in detail in the following chapters. Prior to executing the Login and Accuracy Test, ensure that the system is configured as specified in the System Configuration chapter.

> ⚠ **The procedure suggested in this document is based on the following set of assumptions:**
>
> 1. Adjudication of write ins is not allowed prior to the election day.
>
> 2. The Adjudication application is a part of the Democracy Suite configuration.
>
> 3. Automated loading of results is enabled in the RTR application.

4. ImageCast Voter Activation station is a part of the Democracy Suite configuration.

5. The absentee and mail in ballots received are sorted manually, separating ballots containing write in votes into separate batches.

For any case for which the above assumptions are not true, the Dominion Voting Systems will provide a modified procedure to suit the specific scenario, if required.

Following is a condensed list of recommended Use Procedure steps.

1. Restore of Election Project database received from the Dominion Voting as well as all other artifacts required for the election's successful execution. Alternatively, the jurisdiction might build the projects and related artifacts themselves.

2. Get the media and other artifacts ready (if not provided by Dominion Voting):

   a. Burn the iButton Security Keys in the EMS EED.

   b. Burn the CF cards in the EMS EED.

   c. Program the poll worker Smart Cards in the EMS EED.

   d. Export Activation Codes, save the file on the removable media and transfer it to the ICVA station to configure the ICVA application.

   e. Prepare the test decks with known results.

3. Manually load results from the ICC workstations handling write-in ballots into RTR, in order to avoid them being adjudicated:

   a. Copy the files from such tabulators into a local directory on the RTR workstation. Load results from ICC tabulators handling ballots with write-ins from the (appropriate) directory. In the 'Load Results from Directory' dialog, make sure to check the box **Skip Adjudication** before importing the results. This can be done anytime from 7 days prior to the election day according to jurisdiction's procedures.

4. Results for ballots that contain no write-ins are automatically loaded into RTR and are sent to the Adjudication application for processing.

5. After polls have closed, load results from the CF cards that had been installed in Election Day ICE tabulators - make sure to check the box **Skip Adjudication** before importing the results.

6. Load results from the CF cards that had been installed in Early Vote ICE tabulators - make sure to check the box Skip Adjudication and import the results.

7. Validate and publish all results.

8. Run the Election Night Summary Report - this report is run on an election night and contains a mix of adjudicated and un-adjudicated result files.

9. In the period beginning the day after the election:

   a. Select all result files in status "Skipped Adjudication" and click on the Reject button - this will change the status of those result files from "Published" to "Rejected" state those result files from "Rejected" to "Initial".

   b. Finally, click "Allow Adjudication" for all those result files that will result in their adjudication state being transformed from "Skipped" to "Pending Adjudication".

10. Adjudicate remaining result files, resolving write-ins in the process (see Adjudication Process and Adjudication Process - Digital Ballots) .

11. Handle any provisional ballots and any ballots that need to be remade.

12. Once completed, Validate and Publish all result files and run SOVC reports.

13. If the procedure is done during the L&A testing, then:

   a. Back up all results (see Backup of Election Project, Backup ImageCast Central Tabulator Folders and Backing up of the Adjudication Databases).

   b. Purge results from the system.

   c. Prepare equipment for the election.

14. If the process is followed in an actual election, all results should be backed up as per jurisdictional procedures and as described in Post-Election Backup chapter.

4 Acceptance Testing

Acceptance testing serves the purpose of confirming that the equipment received is in good working order. For this purpose, there is no specific election project, settings or configurations. Usually, jurisdictions will choose to use the default test project, such as Famous Names project to run the acceptance test.

- Election Management System Acceptance Testing
- ImageCast Evolution Acceptance Testing
- ImageCast Central Acceptance Testing
- ImageCast X Acceptance Testing

4.1 Election Management System Acceptance Testing

To perform acceptance testing on the Election Management System, the supervisory election official or designee must complete the following steps:

1. Restore Election Project.

> ⓘ *If you are opening an EMS application (EED, RTR, Audio Studio etc.,) for the first time, you must set the network parameters. Enter all data required.*
>
> a. EMS Application Server Host (IP Address or Name): Type in the name of the EMS application server host.
>
> b. TCP Communication Port: 80 is the default TCP communication port.
>
> c. EMS Application Server Name: Type in emsapplicationserver.
>
> Once all data is entered, click the **Test** button. If the settings are correct, you will receive confirmation in the grey dialog box. If you do not receive a confirmation,
>
> correct your settings, or contact your IT personnel for the proper credentials.
>
> Click the **OK** button to continue.

2. Open EED and then open the restored project by navigating to the **Election Project** > **Open Project**.

3. In the 'Open Project' window select your project from the list of available election projects and click **OK**.

4. A login dialog appears. Enter the credentials you created when creating the Election Project. Note that the username and password fields are case sensitive.

5. Upon successful login, if a dialog appears indicating that the Ballot Style has not been set, click **OK**, and inspect the project to verify that the data is present.

6. In order to log in to EMS RTR and verify that you can open and inspect the project, first, you will need to setup a user with RTR Administrative role. Select the **Administration** > **Application Users** option.

7. In the middle window pane, select **EMS RTR** from the 'Application' drop down list and click **Create New**.

8. An 'Application User' dialog appears.

9. Within the dialog, enter the following information:

    a. Enter an appropriate username.

    b. From the 'Role' drop-down menu, select the role that the new user will be assigned.

    c. Choose whether or not you wish to automatically create a password manually or through the use of the **Generate Password** button. If you choose manually, enter a case sensitive password in the enabled fields.

    > ### ⚠ Password Security Requirements
    >
    > – Default password type - Minimum length is 8 characters which must include at least one number and one letter from the alphabet.
    >
    > – Strong password type - Minimum length should be 10 characters which must include at least one number, one special character and one letter from the alphabet.
    >
    > – Weak password type - minimum six characters.

    d. Add the relevant contact information on the right side of the dialog.

    e. New Credential's status should set from 'Initial' to 'Active'

    f. Click on **Save and Close**.

10. Open the EMS RTR application by double clicking on its icon on the desktop.

11. Select the **Election Project** > **Open Project** option.

ⓘ

> *If you are opening the application for the first time you must set the network parameters. Enter all data required.*

12. Once all data is entered, click the **Test** button. If the settings are correct, you will receive confirmation in the grey dialog box. If you do not receive a confirmation, correct your settings, or contact your IT personnel for the proper credentials. Click the **OK** button to continue.

13. 'Open Project' screen appears. Click on the desired project to select it, and click on the **OK** button.

> ⚠ Only projects in "Ready for Elections" State can be accessed in RTR. If the desired project is not seen in "Open Project" dialog, then election files have not been generated on that project yet.

14. In the election project **Login** dialog window, type in the credentials for the Results Tally & Reporting Administrator and click on the **OK** button. If you do not have the credentials, contact your supervisor.

15. After successfully logging into the EMS Results Tally & Reporting application, the application expands to include new menu items and the status bar is updated to contain project and user details.

Once the verification of EMS has been completed, proceed to the next section of this document.

4.2 ImageCast Evolution Acceptance Testing

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

1. Unpack the ImageCast Evolution tabulator unit and place it on an assembled ballot box if separated from it.

2. Insert the test Compact Flash cards provided with the ImageCast Evolution tabulator unit.

3. Connect the ATI (Audio Tactile Interface) to the ICE using the RJ-45 cable provided.

4. Plug the power supply into a suitable 120 volt AC power source, and connect the power supply to the ImageCast Evolution device.

5. Lift the LCD monitor into the upright position (note that the main power switch under the Thermal Printer door needs to be switched on).

6. The ImageCast Evolution will begin the power-up sequence, and the LCD will display a number of messages at each stage of the sequence.

7. Once the ImageCast Evolution has powered up, the system will prompt for the iButton Security Key to be applied to the iButton Security Key receptacle.

8. Press the iButton Security Key firmly to the receptacle, and hold it in place until the login screen appears on the touchscreen.

9. On the Authorization screen, enter the username and password specific for to project and press the 'OK' button. In the event that the username and password are incorrect, the screen will clear the text and provide a new opportunity to enter the correct username and password.

10. Check whether the battery icon indicates that the AC power supply is present.

11. Check that the ImageCast Evolution internal battery is fully charged. There are two ways to do so:

    a. The LCD display is used to display the internal ImageCast battery status in the same manner as cell phones. There are six different indications that can be shown on the screen:

        i. No battery (system on AC/DC power)

        ii. Almost empty

        iii. 25% full

        iv. 50% full

        v. 75% full

        vi. 100% full

    b. Check the externally visible LEDs on the right side of the unit to ensure that the AC power is connected and to determine the status of the internal battery.

    c. When the ImageCast Evolution is powered down, the status of the battery can be checked by pressing the battery level push button to the right of the LEDs.

12. Check that the security icon (in shape of a padlock) is white color (when security has been compromised, the padlock will turn red).

13. Check that the System Health icon is white. When the system health has been compromised, the icon will turn red. For example, if the ATI is missing, the icon will turn red.

14. In addition to the steps described above, the ICE unit has multiple procedures available for polling place verification:

    a. The election's identification data available via printed report and on-screen.

    b. Identification of the unit available on-screen only.

    c. Identification of all ballot formats available on a printed report.

    d. The contents of each active candidate register by office and of each active measure register at all storage locations (showing that they contain only zeros, i.e. zero tape) available on a printed report.

    e. A list of all ballot fields that can be used to invoke special voting options available on a printed report.

15. More extensive diagnostic tests and procedures are contained within the Technician menu and can be conducted by authorized vendor Technical staff.

4.3 ImageCast Central Acceptance Testing

Acceptance testing for the ImageCast Central scanner is simply a matter of confirming that the physical and electro-mechanical 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:

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

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

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

4. Power up the scanner and PC workstation.

5. Insert the memory card containing the election files into the memory card port.

6. Log onto the computer.

7. Run the ImageCast Central application from the computer.

8. Insert the iButton Security Key and enter the pass code. The application will verify the iButton Security Key against the election files in the memory card port. Errors at this point indicate that the iButton Security Key has not be programmed correctly, and a replacement key may need to be ordered. Otherwise, the application will commence internal diagnostics testing before going into User's Mode.

9. 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.

4.4 ImageCast X Acceptance Testing

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

1. Unpack the ImageCast X tabulator unit and place it on an assembled table.

2. Unpack the BMD printer and place on an assembled table next to the ImageCast X.

3. Insert the USB stick with test election data provided with the ImageCast X tabulator unit.

4. Connect the ATI (Audio Tactile Interface) to the ICX using the USB to RJ-45 cable provided.

5. Plug the power supply into a suitable 120 volt AC power source, and connect the power supply to the ImageCast X device.

6. Open the bottom security door and press the power button. Hold the power button until it lights up green.

7. The ImageCast X will begin the power-up sequence, and the LCD will display a number of messages at each stage of the sequence.

8. If ICX app is not opened by default after a power up, swipe to enter into the menu and open ICX application. The ICX application will prompt for the Smart Card to be applied to the Smart Card Reader.

9. Insert the Tech Smart Card into the Smart Card Reader. Wait for the login screen to appear.

10. On the Authorization screen, enter a valid PIN in order to log in. In the event that the PIN is incorrect, the screen will clear the text and provide a new opportunity to enter the correct PIN. After 8 attempts, the Smart Card will lock and you will have to obtain a new Smart Card.

11. The user is presented with Technical Administration screen.

12. Once logged in, confirm or modify the date and time.

13. Plug in the USB stick with election data into an available USB port

14. Select the load settings button on Technical Administration page to get the prompt with the election data on the USB.

15. Copy the election files (.dat) onto the device. Wait until the election files are copied

16. Remove the USB stick with election data

17. Navigate to "Android Settings"

18. Select "Battery"

19. Check that the battery is 100% Full and that it is not discharging (meaning the unit is running on AC power)

20. Remove the Tech Smart Card.

21. Insert the Poll Worker Smart Card into the Smart Card Reader. Wait for the login screen appears on the touchscreen.

22. On the Authorization screen, enter a valid PIN in order to log in. In the event that the PIN is incorrect, the screen will clear the text and provide a new opportunity to enter the correct PIN. After 8 attempts, the Smart Card will lock and you will have to obtain a new Smart Card.

23. Wait for the election files to decrypt.

24. Make sure the required tabulator is present in the tabulator list.

25. In addition to the steps described above, the ICX unit has multiple procedures available for polling place verification:

   a. The election's identification data available on-screen.

      i. The information is available as part of the "Ballot info" screen shown to every voter after successful ballot activation

   b. Identification of the unit available on-screen only.

      i. Log in as Technician - See steps 8 and 9 in ImageCast X Acceptance Testing.

      ii. From "Settings" section, select the button "Hardware Details"

iii. ICX device details are shown as part of "ICX Device" section

iv. To exit the menu, select "OK" button

v. Remove the Technician card

26. More extensive diagnostic tests and procedures are contained within the Technician menu and can be conducted by authorized vendor Technical staff.

5 System Configuration

Democracy Suite system installation and configuration procedures are described in *Dominion Voting Systems Democracy Suite Installation Procedures*.

The Democracy Suite EMS platform consists of multiple components, including Election Management System, ImageCast Central and ImageCast Evolution. They are arranged in a so-called *EMS Standard Hardware* Configuration.

The EMS Standard hardware configuration provides a client-server local LAN deployment environment. This hardware configuration separates client and server system components by utilizing a single physical server device to run all EMS server components. Client PC computers running EMS client applications are interconnected with the back-end server component through the gigabit LAN network which utilizes the smart network switch. The clients include Adjudication workstations, EMS workstations and ICC workstations as shown in the image below.

Democracy Suite system is capable of being deployed in a segregated dual-installation architecture to protect against propagation of viruses. The architecture allows elections officials to use one or more, permanent server(s) to program the elections and create memory cards prior to the election and to use another, physically separate "sacrificial" server and set of voting devices after the election to tabulate results and generate reports. This is achieved by installing and configuring the Election Management System onto the two physically separate machines, by following the procedure as set out in the *Democracy Suite EMS System Installation and Configuration Procedure* document. One installation is then to be used as a primary/permanent server for creating the election project, ballot art work and producing the election files for programming the central and precinct voting machines/devices to be used in the election. Then, after the election project is complete (in Ready for Election state) and Logic and Accuracy tests have been successfully completed, the project is then backed up and transferred to the sacrificial server using a write-once medium, such as a CD-R. Once the project is restored on the sacrificial server, it is used for tabulating results and generating election and audit reports. The two systems are on their own isolated networks, thereby, preserving their physical separation and ensuring that data cannot flow from one installation/network to the other.

EMS Standard
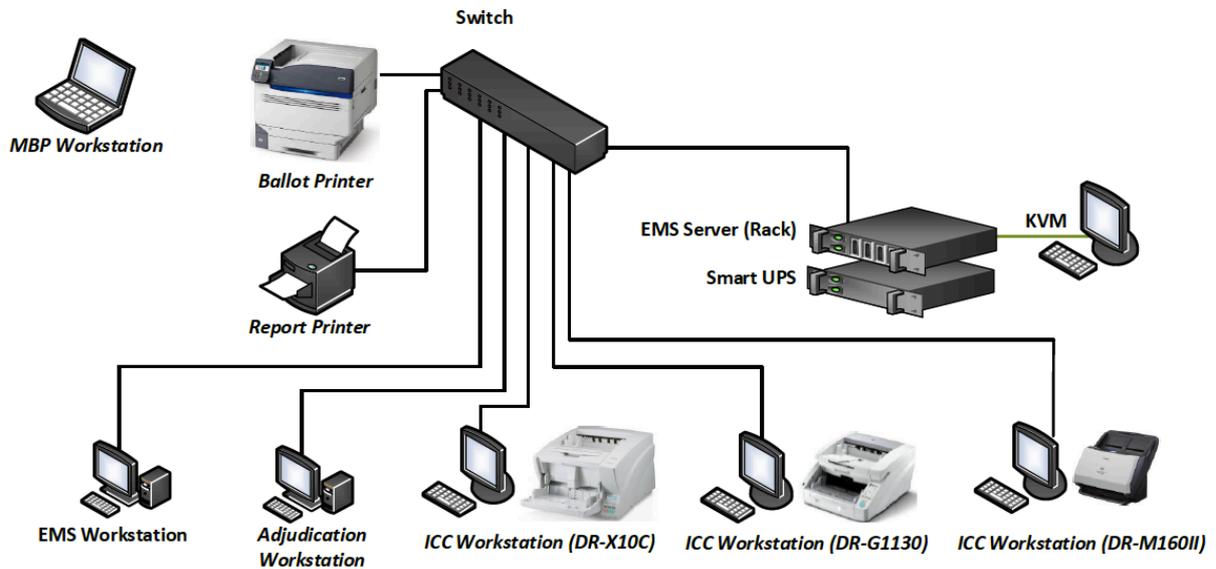
Prior to attempting to execute the use procedure as defined in this document, the system must be configured as defined in this chapter. The configuration of each of the system components is related to specific functionality which needs to be executed, enabled, configured and/or set in a particular manner that enables the use procedure workflow as defined in this document to be executed on the Democracy Suite system.

5.1 Air Gap Configuration

When setting up an air gap configuration, the following isolation method can be used.

5.1.1 Air Gap Configuration
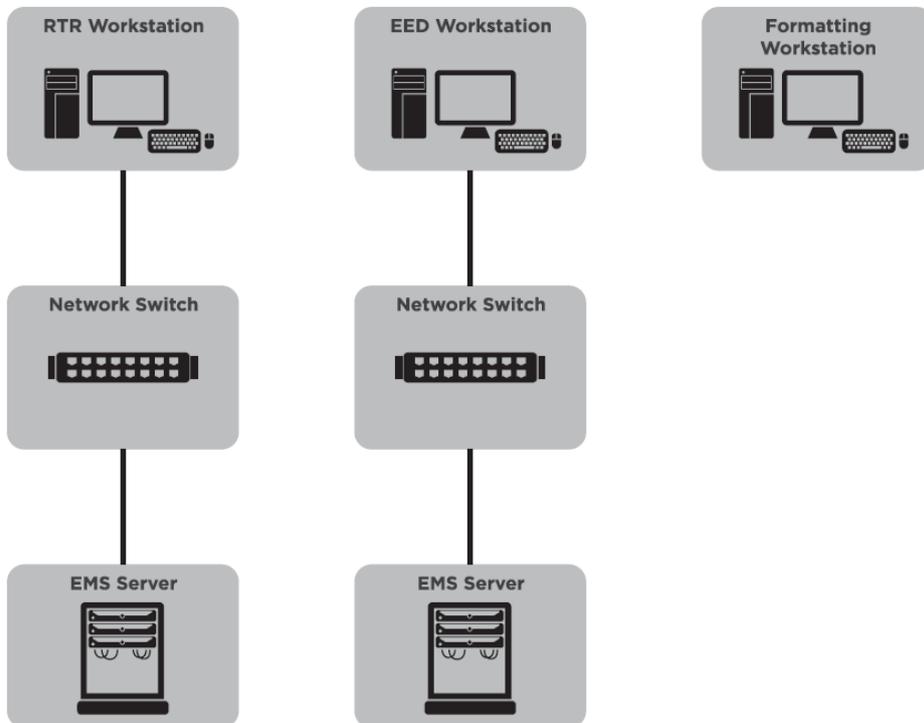
5.2 Air-gap Configuration

The diagram below details the following air gap configuration:

1. EED Server – used for the following:

    a. Election definition

    b. Machine programming (Creation of memory cards and devices)

2. RTR Server (reformatted after each election) - used for the following:

    a. Reading and tallying results

    b. Reporting/Tally

3. Reformatting workstation – used for the following:

    a. Reformatting CF cards and memory devices before introduction to the permanent system

air-gap configuration
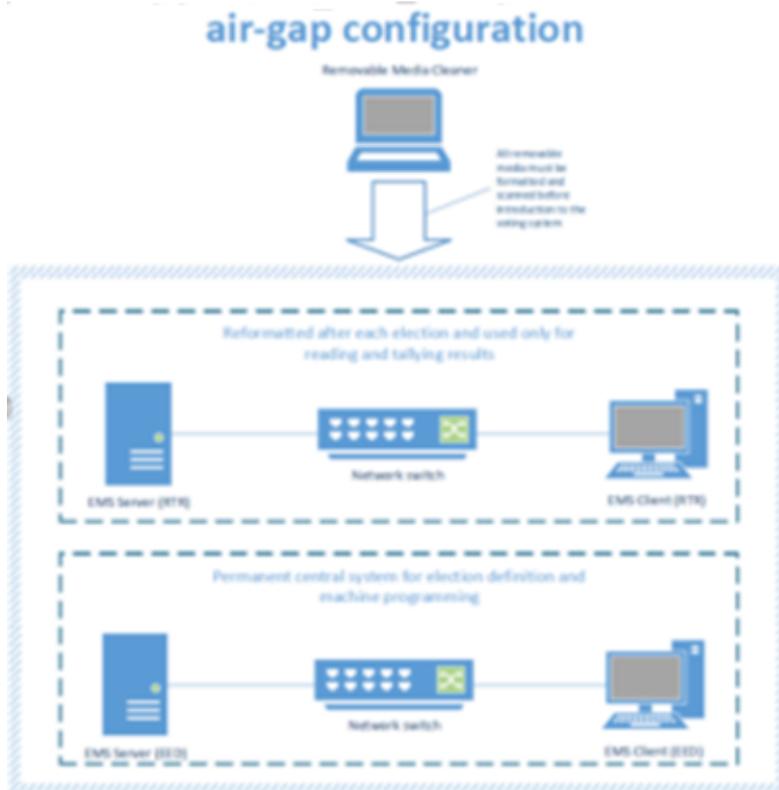
5.2.1 Backup

Complete backups of the county's existing server. Move the backups to an external media device. Once the backups are complete and verified, these will be used / deployed on the newly arrived servers.

5.2.2 DBAN New Equipment

After setting up the new equipment, initiate a DBAN on each of the computers.

To DBAN:

1. Insert the **DBAN CD** and restart the computer.

2. <Enter> into the Boot Menu (press **F12**).

3. (press **F11**) boot manager.
   Boot manager menu opens.

4. Select **One-shot BIOS** boot Menu.

5. Select **Boot** from *Embedded SATA Port Optical Drive: PLDS DVD +/- RW
   Server will now boot from the DVD drive.
   Darik's boot and Nuke screen appears

6. Go down to the command line: Boot: and type in "**autonuke**" .
   DBAN will start automatically.
   The DBAN/wipe process should begin.
   Note: If the DBAN takes a long time to complete, you may terminate the process. You must then reboot the computer to validate that the hard drive is no longer functional.

5.2.3 Connect Equipment

- Connect all computers, printers, scanners and network switch to power sources.

- Connect all keyboards, mice and ibutton readers, and scanners to rear USB ports. Leave the front/side ports clear for thumb drives, etc.

- Connect monitor to the EMS Standard Server using the VGA cable.

- Connect monitor to EMS Client and ADJ Clients using the Display Port cable.

5.2.4 Record Service Tags

Record the service tags for the Dell equipment (server(s), computers, switch(es) and monitors) and serial numbers of the ImageCast Central scanners in the County Installation Worksheet.

Email the serial numbers to the Customer Relations Manager.

5.2.5 RAID and BIOS Settings

This section outlines the configuration of Self-Encrypting Drives and RAID Virtual Disks (EMS Standard Server)

To configure/reconfigure the self-encrypting drives and create the RAID1 and RAID10 virtual disks.

Hardware Configuration (RAID)

Booting into BIOS configuration Utility:

1. Power on the Server.

2. As the host system is booting up, when the BIOS screen appears, press <**CTRL**> <**R**>.
   The Virtual Disk Management screen appears.

NOTE: If a previous RAID configuration exist, please delete RAID configurations and reconfigure the RAID.

Deleting RAID Configurations

1. Depending on the type of server in your Configuration, highlight the **PERC H730 mini** and press **F2**.

2. Arrow down to "Clear Config" and press **Enter**:

3. Server will prompt a warning menu and once confirmed, click **Yes** and press **Enter**.

4. Verify that the Physical Disks are Un-configured.

Configure RAID Virtual Disks

1. Highlight the **PERC 730 mini (Bus 0x03, Dev 0x000** and press **F2**.

2. Arrow down to "Create New VD" and press **Enter**.
   Create New VD screen appears

3. RAID 1 Configurations:

   a. <TAB> to RAID level and select **RAID 1** and press **Enter**.

   b. <TAB> to Physical Disk and select the top two drives.

   c. <TAB> to VD Name and type in: **OS**

   d. <TAB> to Advanced and press **Enter**.
      A Create Virtual Disk-Advanced menu opens.

   e. <TAB> to Initialize and press the spacebar to select, confirm and press **Enter**
      .

4. RAID 10 Configurations:

   a. <TAB> to Physical Disk and select the remaining four present drives.

   b. <TAB> to VD Name and type in: **NAS**

   c. <TAB> to Advanced and press **Enter**.
      A Create Virtual Disk-Advanced menu opens.

   d. <TAB> down to Initialize and press the spacebar to select, confirm and press **Enter**.

Create Secure Encrypting drive (SED)

1. Highlight the **PERC 730 mini (Bus 0x03, Dev 0x0000** and press **F2**.

2. Navigate to Security Key Management.
   A menu dialog will opens.

3. Select **Create Key**.
   The Create Security Key screen displays. The Cursor is located in the Security Key Identifier Section.

4. To enter an identifier for your security key, press <TAB> and enter a passphrase. Follow the requirements in order to create a correct passphrase.
    NOTE: you must remember the passphrase, as there is no backup option when creating the security key.

5. After the correct passphrase is entered and confirmed, navigate with the <TAB> button to highlight the **OK** option and press **Enter** to accept the settings and to exit the section.
    A Security Warning opens.

6. Highlight **YES** and press **Enter**.

Configure BIOS and iDRAC (EMS Standard Server)

The BIOS settings may already be set, but they should be reset to default and reconfigured to ensure they are correct and consistent. EMS Standard Servers should already have their RAID virtual disks configured correctly. This configuration should be verified and reconfigured *only if necessary*. Counties should have previously set a BIOS password (Setup password). This password will need to be entered when attempting to change BIOS settings and when booting from the Acronis DVD.

1. During boot, press **F2** when the prompts appear at top of the screen.
    When the **F2– System Setup** option is highlighted in blue, the system will enter the System Setup menu after devices have been initialized.

2. Enter the BIOS password (Setup password) when prompted.

3. In the System Setup menu, click **System BIOS**

4. In the System BIOS Settings menu, click **Default**

    a. Click **Yes**

    b. Click **OK**

5. Under **Boot Settings**, verify/set the following settings:

    a. Boot Mode set to **BIOS**

    b. Boot Option Settings: Uncheck and **Integrated NIC**

6. Under **Integrated Devices**, set **USB 3.0 Setting** to **Enabled**

7. Under **Miscellaneous Settings**, set the system date and time

8. Click **Finish**.

    • Click **Yes** to save changes, if prompted.
       You are returned to the System Setup menu.

9. In the System Setup menu, click **iDRAC Settings**

10. In the iDRAC Settings menu, click **Network.**

    a. Set **Enable NIC** to **Disabled**

    b. Click **Back**

11. Click **Finish**.

    • Click **Yes** to save changes, if prompted.
      You are returned to the System Setup menu

12. In the System Setup menu, click **Finish.**

    • Click **Yes** to confirm exit and reboot.

Configure BIOS (Windows 10 computers)

BIOS settings may already be set, but they should be reset to default and reconfigured to ensure they are correct and consistent. EMS Standard Servers should already have their RAID virtual disks configured correctly. This configuration should be verified and reconfigured *only if necessary*. Counties should have previously set a BIOS password (Setup password). This password will need to be entered when attempting to change BIOS settings and when booting from the Acronis DVD.

1. During boot, press **F2** when the prompts appear at top of the screen. When the **F2– System Setup** option is highlighted in blue, the system will enter the System Setup menu after devices have been initialized.

2. Enter the BIOS password (Setup password) when prompted.

3. In the System Setup menu, click **System BIOS**

4. In the System BIOS Settings menu, click **Default**

    a. Click **Yes**

    b. Click **OK**

5. Under **Boot Settings**, verify/set the following settings:

    a. Boot Mode set to **BIOS**

    b. Boot Option Settings: Uncheck and **Integrated NIC**

6. Under **Integrated Devices**, set **USB 3.0 Setting** to **Enabled**

7. Under **Miscellaneous Settings**, set the system date and time

8. Click **Finish**.

    • Click **Yes** to save changes if prompted.
      You are returned to the System Setup menu.

9. In the System Setup menu, click **iDRAC Settings**

10. In the iDRAC Settings menu, click **Network**

    a. Set **Enable NIC** to **Disabled**

    b. Click **Back**

11. Click **Finish**.

    a. Click **Yes** to save changes, if prompted.

    b. You are returned to the System Setup menu.

12. In the System Setup menu, click **Finish**

    • Click **Yes** to confirm exit and reboot

5.2.6 Deploying Images

Deploy Image (EMS Standard Server)

Required: Acronis boot disk (DVD), SSD with golden images

1. Start with computer powered off.

2. Insert the Acronis boot disk (DVD) into the drive.

3. Power on the computer.

4. Press **F11** when the Dell logo appears until the *Entering boot.*

5. Select **One shot boot menu.**

6. Under the UEFI boot options, select the DVD drive.
   Acronis launches in UEFI mode

7. On the *Acronis Bootable Agent* screen, select **Manage this computer locally.**

8. Select **Recover.**

9. Under **What to Recover**, click **Select Data.**

10. Click **Browse.**

11. Expand **Local folders à DS_5.2à GOLDEN à *computer type.***

12. Click **OK.**

13. **IMPORTANT:** Under Backup contents, select **Disks.**

14. Check the two disks that appear.

15. Click **OK.**

16. Under Where to recover, click **Clear all.**

17. Click **Recover 'Disk X' to...**

18. Select the appropriate disks for OS and NAS (unavailable disks are grayed out, two disks should be available).

19. Click **OK** to begin the restore process.

20. When the restore process is finished, click **Close** (when complete, *Execution state* is "Idle" and Status is "OK").

21. Click the **X** to close the application.

22. On the *Acronis Bootable Agent* screen, click **Turn off.**

23. Once the computer has shut down, disconnect the SSD.

24. Power on the computer.

25. Eject the Acronis DVD from the DVD drive.

Deploy Image (All Other Computers)

Required: Acronis boot disk (USB), SSD with golden images

1. Start with computer powered off.

2. Connect the Acronis boot disk (USB) to any USB port.

3. Connect the SSD to a **USB3 port.**

4. Power on the computer.

5. Press **F12** when the Dell logo appears until the *One-time Boot Menu* launches.

6. Verify that the boot mode is set to: **Boot Mode is set to UEFI; Secure Boot: ON.**

   - **If boot mode is incorrect**, select **Change boot mode settings** from the menu and set to the correct boot mode.

7. Under the UEFI boot options, select the USB drive.
   Acronis launches in UEFI mode

8. Press **1** to launch Acronis True Image (64-bit).

9. Select **Recover.**

10. Select **Browse for backup.**

11. Select the SSD > **DS_5.2 > GOLDEN >** *computer type.*
    NOTE: ICCONE = G1130 workstation / ICCTWO = X10C workstation

12. Click **OK.**

13. Right-click on the backup file and click **Recover.**

14. **IMPORTANT:** Select **Recover whole disks and partitions.**

15. Click **Next.**

16. Under **What to recover**, check the one disk that opens.

17. Click **Next.**

18. Under **Where to recover**, select the available disk.

19. Click **Next.**

20. Click **OK** on the message.

21. Click **Proceed** to begin the restore process.

22. When the restore process is finished, click **OK.**

23. Click the **X** to close the application.

24. Once the computer has shut down, disconnect the boot disk and the SSD.

25. Power on the computer.

5.2.7 Post Imaging Procedures

Set the Correct Screen Resolution on the EMS Server (EMS Standard Server)

1. On the EMS Standard Server, right click on the Windows icon in the lower-left corner of the screen.

2. Click **Control Panel**.

3. Under Appearance and Personalization select **Adjust Screen Resolution.**

4. Set the resolution to the maximum (or the best appearance for the screen, if different).
   NOTE: The maximum available resolution may not be supported by the monitor (for example, 1600 x 1200). In this case, choose the next highest resolution supported by the monitor (for example, 1280 x 1024).

Verify Time Zone, Date and Time (All Computers)Required: smartphone (or other trusted time source)

1. Click on the Windows icon and type, **Time.**

2. Click **Change Date and Time.**

3. Ensure that "Set time automatically" and "Set time zone automatically" are switched **OFF.**

4. Verify that the time zone is correct (should be: **UTC-08:00, Pacific Time, US & Canada**).

   • Adjust the time zone, if necessary, by selecting it from the drop down menu.

5. Ensure auto-adjustment for daylight saving time is switched **ON.**

6. Verify that the current date and time are correct.

    a. Adjust the date/time, if necessary, by clicking **Change.**

    b. Adjust the date/time and click **Change.**

7. Close the Settings window.

Update Drivers (Windows 10 Computers)

1. Copy the unziped driver .CAB file to the local hard drive (C:\Temp)

2. Right-click on the **Start** button and select **Device Manager**.

3. Right-click on each device and select **Update Driver Software…**.

4. Select **Browse my computer for driver software**.

5. Select the location where the driver files were saved (C:\Temp)

6. Click **Next**.
   Windows searches for a driver. If a driver is found, it will be installed. Otherwise it will say that the driver is already up to date.

7. If prompted to restart the computer, click **No**.

8. Repeat for each device.

9. After all drivers have been updated, restart the computer.

10. Delete the driver pack from C:\Temp

Connect Computers to the Network Switch (EMS Client, ADJ Client, ICC)

- After computers have been renamed and rebooted, connect them to the network switch.

5.2.8 Set Adobe Reader Path in EED (EMS Client)

1. Open Election Event Designer (EED).

2. Open the test project.

3. Select Ballots.

4. Open any ballot and click **Preview**.
   A "Browse" dialog opens.

5. Browse to the location of the Adobe Reader executable:
   C:\Program Files (x86)\Adobe\Acrobat Reader DC\Reader

6. Select **AcroRd32.exe.**

7. Verify that the ballot is opened in Adobe Reader.

8. Close Adobe Reader.

9. Close Election Event Designer.

5.2.9 Security Procedures

Update Anti-virus Definitions

Run the anti-virus definitions offline updater.

Change Windows Passwords (All Computers)

The passwords for numbered **emsadmin, emsuser** and **iccadmin** accounts *must match on the workstation and the server*. The passwords for **adjadmin** and **adjuser** accounts do not need to match.

For login accounts on each computer (All Computers):

1. Log in as the user.

2. Press **Ctrl+Alt+Delete**

3. Select **Change a Password...**

4. Enter the old and new passwords.

5. Click the arrow.

For server authentication accounts (EMS Standard Server):

1. Right-click on the Windows icon and select **Computer Management.**

2. Expand **Local Users and Groups.**

3. Select **Users.**

4. Right-click on the user account and select **Set Password...**

5. Click **Proceed.**

6. Set the new password

7. Click **OK**.

Configure BIOS (Setup) password (EMS Standard Server)

NOTE: The County's computers should already have a BIOS (Admin) password set. Only perform the steps if the password is not set, or if the County wants to change their password.

1. Turn on the server (or reboot, if already powered on).

2. During boot, press **F2** when the prompts appear at top of the screen. When the **F2– System Setup** option is highlighted in blue, the system will enter the System Setup menu after devices have been initialized.

3. Enter the BIOS password (Setup password) when prompted.

4. In the System Setup menu, click **System BIOS.**

5. In the System BIOS Settings menu, click **System Security.**

6. The County will enter the **Setup Password** (**NOT** the **System Password**). Recommendation is at least 8 characters with a combination of uppercase and lowercase letters and at least one number and one special character. Note that only certain special characters are supported on the server.Confirm the password.

7. Ensure that the password has been recorded and kept in a safe place.

8. Click **Back.**

9. Click **Finish.**

10. Click **Finish** to exit and reboot.

Disable boot from USB (Windows 10 Computers)

1. Turn on the computer (or reboot, if already powered on).

2. During boot, press **F2** to enter the Setup menu.

3. In the Setup menu, click **Unlock.**

4. Enter the Admin password.

5. Expand the **System Configuration** Menu.

6. Select **USB Configuration.**

7. Clear the **Enable Boot Support** checkbox.

8. Click **Apply.**

9. Proceed to the next section to set the BIOS (Admin) password.

Configure BIOS (Admin) password (Windows 10 Computers)

NOTE: The County's computers should already have a BIOS (Admin) password set. Only perform the steps if the password is not set, or if the County wants to change their password.

1. While in the BIOS setup screen, expand the **Security** sub-menu.

2. Select **Admin Password** (**NOT** the **System Password**).

3. Set a password (defined by the county)
Recommendation is at least 8 characters with a combination of uppercase and lowercase letters and at least one number and one special character.

4. Click **OK.**

5. Ensure that the password has been recorded and kept in a safe place.

6. Click **Exit** to reboot the computer.

5.2.10 Air-gap Acceptance Testing

Once the necessary steps have been completed, you should begin acceptance testing.

Use the provided Acceptance Test Checklists:

1. EMS Standard Server

   a. Verify presence and condition all equipment that was unpacked

   b. Verify system versions, date and time, and installed software versions

   c. Complete functional testing (except RTR)

2. ImageCast Central

   a. Verify presence and condition of all equipment that was unpacked

   b. Verify system versions, date and time, and installed software versions

   c. Complete functional testing

3. ImageCast X

   a. Verify presence and condition of all equipment that was unpacked

   b. Verify date and time and installed software versions

   c. Complete functional testing

4. EMS Standard Server

   a. Complete remaining RTR steps for functional testing and acceptance of the EMS server

5. Have the county elections staff make copies of the signed acceptance test forms.

6. Retain the original forms.

5.3 EMS Configuration

The EMS system consists of different components that work together to cover the pre-voting and post-voting activity workflows. The configuration of EMS components has to do with the following:

1. Specifics of how to define and configure an Election Project in the EED application, MBS/DCF configuration and access to RTR application (see Election Project Configuration in EED).

2. Configuration of the Adjudication application (see Adjudication Configuration).

3. Setting up RTR to automatically receive the results and publish the batch once they have been adjudicated and submitted (see RTR Configuration).

5.3.1 Election Project Configuration in EED

If your project is programmed by the Dominion Voting Service bureau, then the project you receive will already be created and configured as specified in this use procedure. However, if you are programming your own elections, then ensure that the following are true:

1. The names of all ImageCast Central tabulators are prefixed with the word "ICC" (see Defining Tabulators).

2. There is a separate ICC tabulator (or more than one as needed) for handling write-in ballots (see Defining Tabulators for instructions on what tabulators are typically required in an election (project).

3. The MBS and DCF files are set to agreed values if values other than the default are required (see ImageCast Central Device Configuration Files and ImageCast Evolution Machine Behavioral Settings).

4. Ensure that 'naming template' in EED is set in the way that Ballot Types can be easily distinguished between each other when loaded to the ICVA application (see Configuring Ballot Naming Template).

5. If the project has more languages than those automatically provided by the EMS system, the audio folders for such languages need to be manually created on the EMS server by the EMS Administrator (see Setting up Project for Additional Audio Languages).

6. Create and activate the RTR Administrative user in EMS EED. Note the User Name and Password for the RTR Administrator (see Creation of RTR User in Election Event Designer).

5.3.2 Adjudication Configuration

Set Adjudication Outstack conditions and perform adjudication on the batches (containing no write-in votes) sent to the application (see Adjudication Administration section for more details).

5.3.3 RTR Configuration

The RTR application should be configured to automatically receive results from Adjudication (see Start EMS RTR, Open Project and Enable Automatic Loading of Results to RTR).

5.4 ImageCast Central System Configuration

Depending on the specifics of the Democracy Suite installation, there might be one or more ICC workstations present in the system configuration. The ICC system can work in two modes described below.

1. ICC system used in isolation of the EMS system, where network connectivity does not exist. In this case, the results and images are stored in the specified directory on the local workstation. The results are then transferred, using the removable memory media, and saved to the RTR workstation. Then, such results are loaded into the RTR via Load Results from Directory functionality.

2. ICC system used in a networked configuration, where one or more ICC workstations are connected to the EMS server via a network switch. In this scenario, the ICC system **can** be configured to save the copy of results and images directly to the Results folder on the NAS drive on the EMS server (see Configuring the Local and Remote Path for Saving Results). If it is required for RTR to have the Automatic Loading of Results, then Configuring the Local and Remote Path for Saving Results is necessary. If automatic loading of results is not required, or local only saving of results is preferred, then the Secondary Path can be left undefined.
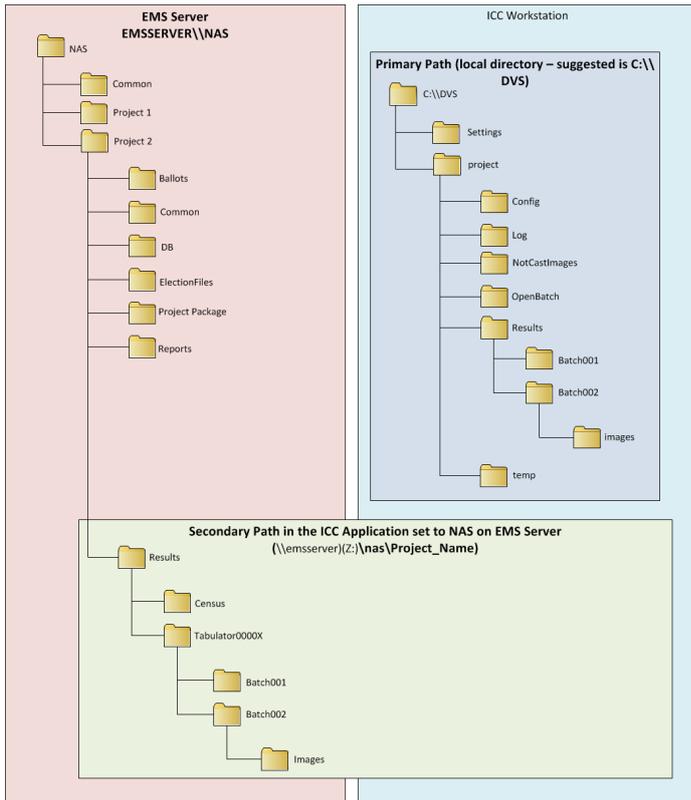
In the use procedure recommended in this document, it is suggested that:

1. The ICC tabulator(s) used for scanning ballots that do not contain write-in votes, should have a Secondary Path configured to the location for automatic result loading to RTR. This same tabulator(s) should be configured to stop on write-in, in order to catch ballots with write-in votes that might have been missed during the manual sorting of ballots.

2. The ICC tabulator used for scanning ballots with write-in votes should have the Secondary Path undefined so that the results and images are saved locally to prevent them from being automatically adjudicated and loaded into RTR. In the case where adjudication of write-ins is allowed prior to the election day, then this step can be skipped and all ballots can be automatically loaded into RTR and adjudicated, as is the case in step one above.

5.5 ImageCast Evolution Configuration

Democracy Suite EMS allows for the programming of specific ImageCast Evolution tabulators for use in office Early Voting or in Vote Centers. Ballot tabulation for a specific precinct, a range of precincts, or all of the precincts in the election may be programmed.

Depending on the consolidation type selected in the election project, the number of ballots that is created for an election could be very large. This number will depend on a number of factors, including: number of precincts, number of languages and number of elector group combinations. For the Early Vote ICE tabulators, care needs to be taken with regards to how many precincts are assigned to each of those tabulators, in case when the number of ballots is very large. It is recommended that Early Vote ICE tabulators be assigned no more than 4000 ballot styles, and no more than 1000 precincts.

5.6 ImageCast X Configuration

ImageCast X can be used only as Ballot Marking Device for election day or early voting. The resulting ballots can be either scanned on the ImageCast Evolution precinct tabulator or ImageCast Central central tabulator.

5.6.1 Installing the Punjabi Font Package

While ImageCast® X Classic can support many languages, it does not contain the full spectrum of font packages. If you are using the Punjabi language with the ICX Classic device, you will need to install the NoTo Sans Gurmukhi font package from Google.

The font package has been downloaded onto a USB flash drive, which you can install into the fonts folder.

The fonts package contains the following font files:

- NotoSansGurmukhi-Bold.ttf
- NotoSansGurmukhi-Regular.ttf
- NotoSansGurmukhiUI-Bold.ttf
- NotoSansGurmukhiUI-Regular.ttf

Note: These font files are for Gurmukhi script (not Arabic script).

Prerequisites for Punjabi Fonts Installation

1. USB flash drive containing the folder with the exact name "fonts".
   The font files (see above) should be present inside this "fonts" folder. There should be one more .xml file inside the "fonts" folder with the name **fallback_fonts.xml,** which is provided by Dominion Voting Systems (DVS). This file specifies the fonts, and the priority order, that will be used to search for any

glyphs not handled by the default fonts specified in /system/etc/system_fonts. xml. That file is normally present on Classic devices inside /system/etc/ folder and is part of the Android system. The file provided by DVS is a modified version of the original file to include newly added fonts.

2. Android application to do the font installation.
This application is provided by DVS. The application copies the files from "fonts" folder from the USB flash device to proper locations on the Classic device and sets the proper file permissions.

Font Installation Procedure

Note: It is assumed that there is already ICX-5.2.6415.22930 (5.2 CA) installed on the device, and that the application is up and running.

1. Insert the USB flash drive containing the fonts folder (see prerequisites above) and FontsInstaller utility application.

2. Using the Technician card, enter the Technician menu.
For detailed steps on how to do that, refer to corresponding documentation for 5.2 application version.

3. Exit the application by tapping on the **Exit** button that is available on Technician menu.

4. Once outside the application, locate the FontsInstaller application inside USB flash drive.
Use standard Android file explorer application to do that (OI File Manager).
Once OI File Manager is opened, select **storage** on upper left, and then **usbcard1**, or **usbcard2**, or **usbcard** with higher suffix number until you find the USB flash drive you have inserted.

5. Tap on **FontsInstaller.apk** to install it.
You will be prompted to allow application installation from unknown sources. Allow that, and then try to install again.

> ⓘ Please ensure that you disable the "allow application install" once the Font Package is installed.

6. Once the application is installed, open it up, read the instructions written inside the application, and then press the "INSTALL FONTS" button. Once the installation is finished press the reboot button on a dialog that would show up.

7. After the machine is rebooted, disconnect the USB flash drive.

8. Uninstall FontsInstaller application by completing the following:

- Exit the ICX-5.2 (CA) application through Technician menu (see step 1).

- Find **FontsInstaller** application through Settings/App, and select **uninstall**.

9. Open ICX-5.2 (CA) application, and Punjabi language should be working properly.

6 Election Readiness and Logic & Accuracy Testing

This chapter describes the procedures used to verify proper functioning of the equipment and Democracy Suite system as a whole. This test is run after installing and configuring the whole Democracy Suite system. The goal is to verify that products are configured to run as an integrated system. This test does not require a specific election project (files) and is usually performed on a single ImageCast Evolution, ImageCast X and/or ImageCast Central tabulator.

Prior to running any system level tests, a trained service technician performs a series of diagnostic tests in order to identify any existing or potential issues with the ImageCast Evolution and ImageCast Central tabulators. Once the diagnostic tests are completed, the Readiness Testing will be executed to determine that the system has been configured properly and that the equipment functions correctly.

Finally, Logic and Accuracy test is run prior to the election to ensure that the election project has been programmed and configured correctly. Every device is to be retested prior to every election in order to validate each ROM prior to the start of elections operations.

The election project database will be provided by Dominion Voting's Service Bureau. The Administrator must restore the Election Project on the EMS server. Once the project is restored, return here and proceed to run diagnostic tests.
Once diagnostic testing is completed, the Logic and Accuracy Testing of System and Components can be executed.

6.1 System Diagnostics Procedures

This section defines the System Diagnostic Testing Procedures, which are performed by a trained service technician in order to identify any existing or potential issues with the ImageCast series of tabulators/units.
If any device fails diagnostic testing or a component of diagnostic testing, please refer to Troubleshooting and Problem Resolution section.

6.1.1 ImageCast Central System Diagnostics Testing Procedures

- In order to perform diagnostic testing on the ICC, the election files (or an election project) need to be installed on the workstation.

- For instructions on how to program an ICC workstation and set it up for scanning (necessary to perform diagnostic testing), please see Section Preparing ImageCast Central Election Files for the ImageCast Central Workstation, or program a single tabulator by burning a CF card for it and copying the files to the ICC workstation.

- Ensure that the iButton Security Key for the same project has been programmed and connected to the same ICC workstation.

- Open the ImageCast Central application and the scanning device will automatically perform a set of diagnostic tests. The tests are run after every power cycle. The system generates a report at the end of the diagnostics testing procedure that outlines the status of the system.

- To display this report navigate to the Administrator's 'STATUS' menu and press the 'SHOW LOG' button in the ImageCast Central application.

6.1.2 ImageCast Evolution System Diagnostic Testing Procedures

Prior to running pre-election diagnostic tests on the ImageCast Evolution, a trained service technician must first login as Technician in order to access the Diagnostics options in the Technician Menu. The trained service technician must have an iButton Technician Security Key, username, and password before performing the following:

- Automated Tests

- Functional Tests (as listed in the table below)

Automated Tests	Functional Tests
Memory	Audio
Compact Flash	Video
EEPROM	Scanner
Thermal Printer	Printer
Ballot Marking Printer	ATI
Video	Sip and Puff or Paddle
ATI	Virtual Keyboard
Audio	Voting Buttons

Internal Clock	System Test
Power	Communication Test
Scanner	
Power On Self Tests (POST)	

A Diagnostics Report can be printed via the ImageCast Evolution thermal printer and retained for auditing purposes.

1. Power up the ImageCast Evolution by pressing the main power switch located under the Thermal Printer door.

2. When prompted by the touchscreen, insert the Technician iButton Security Key into the Security Key receptacle, and enter the Technician Username and Password. If you are unsure of the password, contact your elections supervisor for assistance.

3. The Technician Menu will appear. Under the Technician Main Menu, press the 'Diagnostics' menu button.

4. Ensure that the paper roll is installed in the thermal printer.

5. Ensure that the printer inkjet cartridge is installed.

6. Ensure the ATI and headphones are connected.

6.1.3 ImageCast X Diagnostic Procedures

Prior to running pre-election diagnostic tests on the ImageCast X, a trained service technician must first login as Technician in order to access the Diagnostics options in the Technician Menu. The trained service technician must have a Technician Smart Card and a valid PIN for the card before performing the following:

- Automated Tests
  - Automated tests (POST - Power On Self Tests) are performed at the system start. The system will not initialize if any of the tests fail. The tests include:
    - Power
    - Memory
    - CPU
    - Video subsystem
    - Audio subsystem

- Functional Tests:
    - ATI
    - Paddles
    - Sip & puff
    - Printer

6.2 System Readiness Testing Procedures

System Readiness Testing consists of an end to end system test that helps to ensure that the system has been configured properly and that all parts of it function correctly. The test consists of pre-voting, voting and post-voting phases.

- Pre-voting phase testing consists of restoring and, if necessary, modifying the election project to be used for Readiness Testing as well as preparing all other necessary material for testing such as iButtons, Security Keys, test decks etc.

- The Voting phase consists of scanning the test decks on all physical tabulators.

- Post-voting involves loading results and analyzing the reports. Each of the following subsections addresses one of these phases.

6.2.1 Performing the Pre-Voting Phase Readiness Test

Tabulator pre-voting readiness tests can be performed with any suitable Democracy Suite election project and ballots. Dominion Voting Systems will provide state-specific Demonstration and/or Acceptance Test election projects for this purpose, or the jurisdiction can develop their own. In addition, the Voter Activation XML file will be provided for importing into the ImageCast Voter Activation application. Importing the Voter Activation xml file will configure the ImageCast Voter Activation application to function correctly with that specific election project, and enable the app to be used to program Voter Smart Cards. For detailed information on how to export the Voter Activation codes from the EMS EED, please see Section Exporting of Voter Activation Codes from the EMS EED.

Jurisdictions that have their elections programmed by Dominion Voting Systems' Service Bureau should proceed to Section Restore of Election Project to restore the test election database and then return here to continue. Jurisdictions that program their own elections will create their projects according to the custom use procedure document created for them by Dominion Voting Systems, which they will receive after purchasing the system. In addition, specific procedures and tips for creating election projects in EMS EED are contained in the Section Creating Election Project.

Get the media and other artifacts ready (if not provided by Dominion Voting):

- Burn the iButton Security Keys in the EMS EED.

- Burn the CF cards in the EMS EED. In the case of an Administrator managing multiple ICC tabulators, they will copy election files for ICC tabulators onto USB sticks from the EMS server, and load the data onto each ICC workstation. Refer to Programming of Election Files and Security Devices, Managing ImageCast Central Tabulator Folders and Preparing ImageCast Central Election Files for the ImageCast Central Workstation.

- Program the poll worker Smart Cards in the EMS EED.

- Export Activation Codes, save the file on the removable media and transfer it to the ICVA station to configure the ICVA application. Once the election project is restored, if the Voter Activation Codes have not been provided, they need to be exported from the EMS EED and stored on a removable memory device so that they can be transferred to the ImageCast Voter Activation workstation. Activation Codes should then be imported into the ImageCast Voter Activation application. In addition, even though ballot adjudication will not be performed in the Election Readiness Testing phase, the correct configuration and setup of the Adjudication system should be performed at this time.

- Prepare the test decks with known results.

> ⚠ Depending on the expiration date set on the Adjudication Certificate, your Administrator might need to create a new certificate and install it on the EMS Server as well as the remote adjudication client workstations.

Once this step is complete, the voting phase readiness test can begin.

6.2.2 Performing the Voting Phase Readiness Test

Voting phase readiness test is performed on **all** ImageCast tabulators. It involves scanning *a* pre-marked test deck of ballots (with a known set of results) for the specific election.

Voting Phase Readiness Testing ImageCast Evolution

This section describes the Readiness testing procedure for the ImageCast Evolution tabulators. The procedure consists of loading CF cards containing election files on each ImageCast Evolution tabulator and testing it by scanning test decks and verifying the results reports.

⚠️ **Make sure to test every physical ImageCast Evolution tabulator that might be used for Early Voting or Election Day.**

1. On the ImageCast Evolution tabulator, insert the memory card containing the Election Project into the CF1 card slot, and the Initialized backup memory card into the CF2 card slot.

2. Power up the ICE tabulator by lifting the LCD monitor into the operating position (note that the main power switch under the Thermal Printer door needs to be switched on). For instructions on the power on procedure, see steps 3 through to 7 in Section ImageCast Evolution Acceptance Testing.

3. When prompted by the LCD screen, insert the iButton Security Key and enter the appropriate password. For more details, see step 8 and 9 in Section ImageCast Evolution Acceptance Testing.

4. Visually confirm that the date and time are correct by looking at the lower left section of the ImageCast Evolution LCD screen (if Date and/or Time need to be changed, please consult with designated ImageCast Evolution Level 1 Technician).

5. Open the polls.

6. Use the Voter Activation Smart Card to activate the voting session.

7. Tabulate the pre-marked test deck of Readiness Testing ballots into the ImageCast Evolution tabulator by feeding the test deck and then return here to continue with next steps below.

8. Start an Accessible Voting Session and vote a predefined voting pattern.

9. After all ballots have been tabulated and Accessible Voting Sessions have been completed, insert the iButton Security Key and close the polls.

10. Allow at least one result tape to print and confirm that you do not need another copy. For more details see Closing the Polls on ImageCast Evolution.

11. Power down the unit by pressing the 'Shut Down' icon at the top right corner of the screen. For more details see Closing the Polls on ImageCast Evolution.

12. On the right side of the ImageCast E volution open the CF1 and the CF2 card slot doors and remove both cards from the tabulator. Place both cards in the envelope provided. These cards will be used for tally in the Results Tally & Reporting application.

13. For each tabulator tested, confirm that the tabulator-level result reports match the expected results from the pre-marked test deck.

14. Repeat this test procedure for each physical ImageCast Evolution tabulator.

Voting Phase Readiness Testing ImageCast Central

This section describes the Readiness testing procedure for the ImageCast Central tabulators. The procedure consists of loading of ICC election files onto the ICC workstation and testing each of the ImageCast Central tabulators by scanning test decks and verifying the results reports.

Before you begin:
If there are any other files or folders present in "C:\DVS", delete them before proceeding. Perform the steps outlined in the Section Preparing ImageCast Central Election Files for the ImageCast Central workstation.

Copy the contents of the "ICC Election Files" folder prepared in the previous step into the "C:\DVS". If you will be using multiple projects on one ICC workstation, then you might want to create subfolders with project names in order to differentiate between them.
Before you begin, ensure that the ImageCast Central workstation and scanner are powered on and ready to load election files. If the ICC workstation is already set up, continue with the next step.

1. Open ImageCast Central application.

2. Load the desired tabulator files using Project Management functionality.

3. Generate the Zero report by selecting the 'STATUS' icon.

4. Configure the server path.

5. Access Supervisor mode In the ICC application.

6. Set Scanner Properties and ICC Scan Options.

7. If this is the first tabulator tested, the multi-feed settings need to be verified . However, this verification can be skipped for every next tabulator under test.

8. Tabulate and process the pre-marked test deck of ballots into the ImageCast Central for that precinct.

9. Close the poll.

10. Generate results report.

11. Repeat steps 3 through to 11 for each ImageCast Central physical tabulator. For instructions on how to switch between different ICC tabulators within the ICC Application, please see Section Loading Election Files for a New Tabulator.

12. For each tabulator tested, confirm that the tabulator-level result reports match the expected results from the pre-marked test deck.

13. Exit the ImageCast Central application by clicking on the **EXIT** button. The confirmation dialog will appear. Click **Yes** to exit the application.

14. When all tabulators have been tested, proceed to the next section.

Voting Phase Readiness Testing ImageCast X

This section describes the Readiness testing procedure for the ImageCast X tabulators. The procedure consists of loading CF cards containing election files on each ImageCast X tabulator and testing it by scanning test decks and verifying the results reports.

> ⓘ **Make sure to test every physical ImageCast X tabulator that might be used for Early Voting or Election Day.**

1. On the ImageCast X tabulator, insert the USB stick containing the Election Project into the top USB slot.

2. Power up the ICX tabulator by pressing the power button on the back side, below the bottom trap door. For more instructions, see ImageCast X Acceptance Testing.

3. When prompted, insert the Technician Smart Card and enter the appropriate password. For more instructions, see ImageCast X Acceptance Testing.

4. Confirm or modify the date and time.

5. Load the appropriate election files from a USB stick. For more instructions, see ImageCast X Acceptance Testing.

6. Remove the Technician Smart Card

7. Insert the Poll Worker Smart Card and log in. For more instructions, see ImageCast X Acceptance Testing.

8. Wait for the election files to decrypt.

9. Select the appropriate tabulator from the tabulator drop down list.

10. Open the polls.

11. Remove the Poll Worker Smart Card.

12. Use the Voter Activation Smart Card to activate the voting session.

13. Mark the ballots as indicated in the pre-marked test deck of Readiness Testing ballots and then return here to continue with next steps below.

14. Start an Accessible Voting Session and vote a predefined voting pattern.

15. After all ballots have been tabulated and Accessible Voting Sessions have been completed, insert the Poll Worker smart card, login and close the polls.

16. Power down the unit by pressing the 'Power Off' icon at the bottom right corner of the screen. For more details see Closing the Polls on ImageCast X.

17. Repeat this test procedure for each physical ImageCast X tabulator.

18. Feed the marked ballots either to ImageCast Evolution precinct tabulator or ImageCast Central central tabulator.

6.2.3 Performing the Post-Voting Election Day Phase Readiness Test

This section provides instructions on how to tally and report results from the ImageCast Evolution and ImageCast Central tabulators. Additional instructions can be found in the 'Help' menu within the EMS Results Tally & Reporting application (referred to as RTR).

1. Open the RTR application. If the project was created by the Dominion Voting's Service Bureau, the RTR username and password will be provided to the jurisdiction. Jurisdictions programming their own elections will have to have their Administrator create an RTR user account and activate it in EED.

2. Open the appropriate Election Project and enter your login credentials.

3. Load the results files, audit log files and result images (if enabled and required) from the ImageCast Evolution , and the ImageCast Central tabulators into the RTR application. Once all result files are uploaded, return here and continue with the next step.

4. Validate and publish results files in the RTR application.

5. Create the Election Summary Report.

6. Confirm that the results from the Election Summary Report from RTR matches the tabulator summary reports and the expected test deck results.

7. Review a subset of Audit Marked images in order to confirm that ballot image files are clear and readable and to verify that the system is interpreting the individual ballots accurately.

6.3 Logic and Accuracy Testing of System and Components

Formal Logic and Accuracy Testing is required to be conducted in accordance with the Elections Code to ensure that the system has been configured correctly for an election.
This testing is performed using the election project that is to be used in the real

election and a set of ballots for which the correct results are known ahead of time. Such a test set, also called a test deck, is run through the system to ensure that the results shown by the tabulator are aligned with those expected.

After Logic and 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 ready to be scanned.

Notify the election supervisor immediately if there are any problems or irregularities during Logic & Accuracy testing. If at any time during the testing the system fails or produces incorrect results that cannot be attributed to human error, notify the election supervisor immediately.

6.3.1 Pre-Conditions for Performance of Tests

Get the media and other artifacts ready (if not provided by Dominion Voting), same as was done in the Readiness Testing. See Performing the Pre-Voting Phase Readiness Test for more details.

Restore Election Project

Prior to beginning an L & A testing, the Administrator needs to restore the election project.

Pre-Testing of the Scanning setting with Official election ballots from the certified ballot printer

Pretesting the Scanning setting with the actual election ballots, as delivered by the certified ballot printer, must be performed. When the first printed Official ballots and /or test decks are received by the jurisdiction (prior to Logic and Accuracy testing), they should be tested on the ImageCast Central system with the election project to confirm that the tabulator scanning parameter settings and the VRS settings will work with the ballots as printed. With the variety of print methods used to print ballots, and the substantial variation in the types of printing presses, a small batch of ballots, numbering between 50 and 100 ballots (sampled throughout the ballot types and styles) should be tabulated with one of the ImageCast Central tabulators that have been defined in the elections project (usually the Absentee tabulation unit). These ballots will not be marked (although they can be if they are test deck ballots) to confirm that they will not misread and that un-voted voting positions do not read as ambiguous marks.

To run this test, perform the following steps:

1. Setup, load, and prepare your ImageCast Central tabulator for use as per the procedures outlined below.

    a. On the Configuration menu, click the "Scan Options" button.

b. With the "Scan Options" dialog box displayed, select the option to "Stop Scan on" on Ambiguous marks.

2. Return to the Scanning menu and start scanning the batch of ballots.

a. In order for the test to pass, there should not be stoppages due to ambiguous marks.

b. If the scanner is stopping due to the ambiguous marks, troubleshoot the scanner.

Test Decks Required for Logic and Accuracy Testing

Test decks are generated either manually from unmarked ballots, automatically using the Democracy Suite Test Deck Generator utility, or by a combination of the two methods. Ensure you test for the handling and reporting of exception ballots (blank, over-voted, write-in, error, etc.) as required by Elections Code. While test decks can be created at the jurisdiction on the EMS ballot printer, actual "Official Ballots" produced by the CA-certified ballot printer should also be included in the test. A control sheet should be created that summarizes the total results for the test decks prior to beginning the Logic and Accuracy Testing. Pre-marked test decks should be supplied by the jurisdiction's selected certified ballot printer. This ensures that the exact paper, ink, and print process for use on Election Day are being tested. There are two distinct levels of test decks: *"Ballot Level"* and *"Tabulator Level"*. The meanings of the different levels of test decks will become clear when executing the procedures below.

1. **Establish "Ballot-Level" test decks for each ballot style**: Each ballot style will have its own test deck, called a "Ballot Level" test deck. For a given ballot style, each and every voting space on that ballot style must be tested. Therefore, the number of ballots in the "Ballot Level" test deck will depend on the number of candidates that appear on that particular ballot style. Once the "Ballot Level" test decks have been created for each of the ballot styles, conduct tabulator and manual counts in order to determine the results for each "Ballot Level" test deck.

2. **Establish "Tabulator Level" test decks for each tabulator**: Each tabulator will also have its own test deck called a "Tabulator Level" test deck. The test deck for a given tabulator will simply be the combination of the "Ballot Level" test decks for each of the ballot faces that the tabulator is programmed to accept. If applicable, the "Tabulator Level" test deck for a given tabulator should include ballot styles that the tabulator is programmed to reject in order to ensure that it has been correctly programmed to do so. For example, if the tabulator is programmed to read Ballot Style 1 of 80, another style (of the 80) should be scanned to verify that the machine is programmed to reject them. The results

for each of the "Tabulator Level" test decks can be determined by manually adding together the results from each of the "Ballot Level" test decks that comprise the particular "Tabulator Level" test deck.

Backup of Election Project

Ensure that the EMS Administrator has backed up Election Project prior to starting the Logic and Accuracy Test. The project package created during this back up procedure must be manually copied and saved to a dedicated and safe location. The folder where the project is saved should be named distinctly in order to differentiate it in the future.

> ⊘ Do not rename the project backup package.

6.3.2 Logic and Accuracy Test Procedures

Once the system has been fully configured, and as soon as possible after receipt of the first set of official election ballots from the printer, the jurisdiction must conduct formal "Logic & Accuracy" testing in order to confirm that the system has been correctly configured, and that all components are functioning properly. The process of Logic & Accuracy testing is described generally, and then more specifically in the sections to follow.

> ⊘ The detailed Logic & Accuracy testing procedures may vary from one jurisdiction to the next. The procedures presented 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.

- Logic & Accuracy testing should include the same steps as if running a real election.

- If any vote discrepancies or errors are encountered during this process, the ballots and the procedure must be reviewed as human error is the most likely the cause. Otherwise, the Administrator is informed immediately. Once the problem has been corrected, repeat the entire Logic & Accuracy testing procedure for the selected tabulator(s).

- If there are no errors or discrepancies, sign and date the forms certifying that the Logic & Accuracy testing has been conducted successfully. These forms should be retained, along with the test decks, as part of the test documentation records for the election.

- Administrator must backup all results following the successful Logic & Accuracy test.

- Finally, each of the tabulators are re-zeroed and the results database is purged in order to delete the Logic & Accuracy results from the system prior to the actual election.

- Once the Logic & Accuracy testing is complete and the system has been re-zeroed, all components of the system must be stored in a secure location until the election (or until the first early voting opportunity) in order to ensure that they cannot be accessed or tampered with.

⚠ The example of Logic & Accuracy testing is described in the subsections below. This procedure assumes that write-in adjudication is not allowed prior to the election day and that EMS Adjudication application is a part of the Democracy Suite configuration and workflow. The process starts with detailed procedure for ImageCast Evolution then ImageCast Central tabulators, Post-Election Processing and Adjudication and it ends with detailed procedure for results processing in the EMS RTR application.

ImageCast Central Logic & Accuracy Testing Procedure

This section describes the Logic & Accuracy testing procedure for the ImageCast Central (referred to as ICC) tabulators. The procedure consists of loading each set of ICC election files and testing these election files by scanning test decks and verifying the results reports. The election files for each ICC tabulator are loaded, test decks scanned, adjudicated and the results uploaded to EMS RTR. The testing procedure is repeated for each of the ICC tabulators defined in the project. After testing is complete, the test results are archived.

ⓘ **Make sure to test every tabulator that is defined in the Election Project (including any spare tabulators defined, that might be used for election day replacement).**

1. Before you begin, ensure that the ICC workstation and scanner are powered on and ready to load election files. If the ICC workstation is already set up, continue with the next step.

2. The election administrator will need to copy sets of ICC election files from the EMS Server to the ICC workstations and prepare each set of election files to be loaded on ICC workstations.

> ⊘ If the election project has been prepared by the Dominion Voting Systems Service Bureau, the prepared ICC election files will be provided along with the election project. The only step that must be performed is copying the files to the ICC workstation. After the ICC election files have been copied over, continue to the next step.

3. Ensure that the Administrator is in possession of a labelled iButton that corresponds to each set of ICC election files.

4. The election administrator will need to deploy election files to be tested, by copying the contents of the prepared in section Preparing ImageCast Central Election Files for the ImageCast Central Workstation to the "C:\\DVS" (if you are installing multiple projects on one ICC workstation, then subfolders, named by project, should be created within the DVS folder to differentiate between the projects, and election files copied into corresponding project folders).

5. Open ICC application.

6. Generate the Zero report by selecting the 'Show Results' option under the 'STATUS' icon.

7. Configure the server path for the ICC tabulator to enable the automatic loading of results into RTR. Set the secondary path to the appropriate EMS NAS location (**EMSSERVER\NAS\PROJECT_NAME**) and enable automatic loading of results in the RTR application. Once the ICC starts scanning ballots, it will automatically create the "Result" folder within that location to store the results. Within this Results folder, there will be separate folders for tabulators and then batches. However, if setting the secondary path for an ICC tabulator handling ballots with write-ins, then set the path to a local folder clearly marked as write-in tabulator folder.

8. Access Supervisor mode in the ICC application.

9. Set Scanner Properties and ICC Scan Options.

10. If this is the first tabulator tested, the multi-feed settings need to be verified. However, this verification can be skipped for every next tabulator under test. For more information, please see *Democracy Suite ImageCast Central Installation and Configuration Procedure,* **Section 10.3 Running the ImageCast Central Application**.

11. Tabulate and process the pre-marked test deck of ballots into the ICC for that precinct.

12. To switch between ICC tabulators deployed on a single ICC workstation, use the Project Management utility within the ICC Application.

13. Close the poll.

14. Generate results report.

15. Exit the ICC application by clicking on the **EXIT** button. The confirmation dialog will appear. Click **Yes** to exit the application.

16. Have the Administrator back up the entire DVS directory.

17. Ensure to complete the test for each ICC tabulator.

18. For each tabulator tested confirm that the tabulator-level result reports match the expected results from the pre-marked test deck.

19. Open the EMS Results Tally & Reporting application (referred to here as RTR). If the project was created by the Dominion Voting's Service Bureau, the RTR username and password will be provided to the jurisdiction. Jurisdictions programming their own elections will have to have their Administrator create an RTR user account and activate it in EED.

20. Open the appropriate Election Project and enter your login credentials.

21. Load the results files, audit log files and result images (if enabled and required) from the ICC tabulators into the RTR application.

> ⚠ The results for tabulators that have the Secondary Path set to the EMS Server, and automatic loading of results enabled in the RTR application, the results will automatically be loaded into the EMS. However, for tabulators that have only load path set (such as the case might be for the ICC tabulators handling write-ins, the results will need to be loaded manually. When loading results from the ICC tabulator handling ballots with write-ins, ensure that the "Skip Adjudication" checkbox is selected. Once all result files are uploaded, return here and continue with the next step.

22. Validate and publish results files in the RTR application.

23. Create the Election Summary Report.

24. Confirm that the results from the Election Summary Report from RTR match the tabulator summary reports and the expected test deck results.

25. Review a subset of Audit Marked images in order to confirm that ballot image files are clear and readable and to verify that the system is interpreting the individual ballots correctly. If using Adjudication, then after completing the Logic and Accuracy test for both ImageCast Evolution and ImageCast Central (explained in the following section), results will be adjudicated and verified. If not using Adjudication, then write-in can be resolved directly in RTR (See *Democracy Suite EMS Results Tally & Reporting User Guide, Sectrion* **9.1 Result files review and write-in resolution.)**

ImageCast Evolution Logic and Accuracy Test Procedures

> ⓘ **Make sure to test every tabulator that is defined in the Election Project (including any spare tabulators defined, that might be used for election day replacement).**

This section describes the Logic & Accuracy testing procedure for the ImageCast Evolution (referred to as ICE) tabulators. The procedure consists of loading election files to an ICE tabulator and testing of these election files by scanning ballots and verifying the reports in RTR. This procedure is repeated for each ICE tabulator programmed in the Election Project.

> ⚠ Initially, the results will be loaded into RTR with "Skipped Adjudication" option checked and the Election Summary Report will be run (simulating election night reporting). Then, if using Adjudication, the originally imported results for such tabulators will be Reset in RTR. The ballots will then be adjudicated and canvass reports will be produced. After testing is complete, the CF cards used will be re-zeroed and stored for later use in official ballot processing.

1. Burn the CF cards and corresponding iButton for ICE to be tested.

2. Burn the Poll Worker Card for logging into ImageCast Voter Activation application.

3. Insert the memory card containing the Election Project into the CF1 card slot of the ICE tabulator, and the Initialized backup memory card into the CF2 card slot on the tabulator. For more details on how to do this, please see step 2 in Section ImageCast Evolution Acceptance Testing.

4. Power up the ICE tabulator by lifting the LCD monitor into the operating position. For instructions on the power on procedure, see steps 3 through to 7 in Section ImageCast Evolution Acceptance Testing.

5. When prompted by the LCD screen, insert the iButton Security Key and enter the appropriate password. For more details, see step 8 and 9 in Section ImageCast Evolution Acceptance Testing.

6. Visually confirm that the date and time are correct by looking at the lower left section of the ICE LCD screen.

7. Open the polls.

8. Log into the ImageCast Voter Activation (ICVA) application and Import Activation Codes (if not already done) on the ICVA workstation.

9. Burn the Smart Card for activating the voting session for the tabulator tested.

10. Prepare the ICE for scanning by activating the 'Standard Voting' session via the Voter Activation Smart Card.

11. Tabulate the pre-marked test deck of Logic & Accuracy Testing ballots into the ICE tabulator by feeding the test deck and then return here to continue with next steps below.

> ⚠ Please note and confirm the tabulators' handling of any exception ballots per DCF/MBS that were set according to jurisdiction's procedures.

12. Start an 'Accessible Voting Session' and vote a predefined voting pattern for every language defined in the Election Project. Test every candidate position at least once, and verify that the audio message matches the visual ballot display.

13. After all ballots have been tabulated and an Accessible Voting Sessions have been completed, insert the iButton Security Key and close the polls.

14. Allow the two result tapes to print and confirm that you do not need another copy.

15. Power down the unit by pressing the 'Shut Down' icon at the top right corner of the screen.

16. On the right side of the ICE, open the CF1 and the CF2 card slot doors, and remove both cards from the tabulator. Place both cards in the envelope provided. These cards will be used for tally in the Results Tally & Reporting application.

17. For each tabulator tested, confirm that the tabulator-level result reports match the expected results from the pre-marked test deck.

18. Open the EMS Results Tally & Reporting application (referred to as RTR). If the project was created by the Dominion Voting's Service Bureau, the RTR username and password will be provided to the jurisdiction. Jurisdictions programming their own elections will have to have their Administrator create an RTR user account and activate it in EED.

19. Open the appropriate Election Project and enter your login credentials..

20. Load the results files, audit log files and result images (if enabled and required) from ICE tabulators, ensuring that adjudication is skipped. Once all result files are uploaded, return here and continue with the next step.

21. Validate and publish results files in the RTR application.

22. Create the Election Summary Report.

23. Confirm that the results from the Election Summary Report from RTR matches the tabulator summary reports and the expected test deck results.

24. Review a subset of Audit Marked images in order to confirm that ballot image files are clear and readable and to verify that the system is interpreting the individual ballots correctly.

ImageCast X Logic and Accuracy Test Procedures

> ⊙ **Make sure to test every tabulator that is defined in the Election Project (including any spare tabulators defined, that might be used for election day replacement).**

This section describes the Logic & Accuracy testing procedure for the ImageCast X (referred to as ICX) tabulators. The procedure consists of loading election files to an ICX tabulator and testing of these election files by scanning ballots and verifying the reports in RTR. This procedure is repeated for each ICX tabulator programmed in the Election Project.

> ⚠

Initially, the results will be loaded into RTR with "Skipped Adjudication" option checked and the Election Summary Report will be run (simulating election night reporting). Then, if using Adjudication, the originally imported results for such tabulators will be Reset in RTR. The ballots will then be adjudicated and canvass reports will be produced. After testing is complete, the USB sticks used will be re-zeroed and stored for later use in official ballot processing.

1. Burn the USB sticks and corresponding Smart Cards for ICX to be tested.

2. Burn the Technician for accessing the Technician menus.

3. Burn the Poll Worker Smart Card for logging into ImageCast Voter Activation application and accessing the Poll Worker menus.

4. Power up the ICX device by pressing the power button. For more details on how to do this, please see step 5 and 6 in Section ImageCast X Acceptance Testing.

5. Insert the Technician Smart Card and log in. For more details on how to do this, please see step 8 and 9 in Section ImageCast X Acceptance Testing.

6. Confirm or modify the date and time. For more details on how to do this, please see step 10 in Section ImageCast X Acceptance Testing

7. Insert the USB stick containing the Election Project into the available USB slot card slot of the ICX tabulator and load election files. For more details on how to do this, please see steps 11 and 12 in Section ImageCast X Acceptance Testing.

8. Open the polls.

9. Log into the ImageCast Voter Activation (ICVA) application on the ICVA workstation and Import Activation Codes (if not done already).

10. Burn the Smart Card for activating the voting session for the tabulator tested.

11. Use the Voter Smart Card to produce marked ballots according to the predefined pattern for Logic & Accuracy Testing. Repeat the process as many times as there are ballots to be marked.

> ⚠ Please note and confirm the tabulators' handling of any exception ballots per MCF that were set according to jurisdiction's procedures.

12. Burn the Smart Card with Accessible Voting Session enabled and vote a predefined voting pattern for every language defined in the Election Project. Test every candidate position at least once, and verify that the audio message matches the visual ballot display.

13. Close Poll and power down the unit by selecting "Power Off" option at the bottom right of the Poll Worker or Technician menus.

14. Feed all of the printed Electronic Mobile Ballots to either ImageCast Evolution or ImageCast Central scanners/tabulators.

15. Continue the procedure for the appropriate scanning/tabulation device.

Adjudication and Post-Election Processing Logic and Accuracy Test Procedures

Up to this point, the L & A procedure covered testing of Pre-election and Election Day period activities. This section describes the procedure for testing the Post-Election Day period activities. In this period the adjudication of Absentee/All Mail and Early Vote and Election Day ImageCast Evolution ballots takes place.

1. Open the EMS Results Tally & Reporting application. If the project was created by the Dominion Voting's Service Bureau, the RTR username and password will be provided to the jurisdiction. Jurisdictions programming their own elections will have to have their Administrator create an RTR user account and activate it in EED.

2. Open the appropriate Election Project and enter your login credentials.

3. Display a list of loaded results, by clicking on the **Result Files** option in the **Activities Navigation Panel** (General group).

4. In the **Result Files** main activity screen omit the search criteria and click on the **Search** button to list all result files.

5. Use the **Sort** functionality to identify result files that are in status "Skipped Adjudication".

6. Select/highlight all such result files and click on the **Reset** button, which will enable adjudication to be performed on those result files.

7. The Adjudication Administrator should log into the EMS Server, open and configure the Adjudication application (see Adjudication Administration section for more details) and then start adjudication.

8. The General Adjudication User(s) should log into the remote client workstation(s) and adjudicate ballots (see sections Adjudication Process and/or Adjudication Process - Digital Ballots). This step in the procedure can be done in parallel with the next step or they can be executed sequentially as listed.

9. The Adjudication Administrator performs administrative tasks, such as managing batches, running reports and submitting batches to RTR for tallying (see Adjudication Administration for more information).

10. Adjudicate all ballots according to preset out-stacking condition and adjudicate write-ins (see Adjudicate Write-ins and/or Resolving a Write-in).

11. Validate and publish all adjudicated results.

12. Run the Statement of Votes Cast report in RTR.

13. Compare and verify that the Statement of Votes Cast report matches the expected results.

6.3.3 Logic and Accuracy System Test Acceptance Criteria and Completeness

Logic and Accuracy testing is only complete when all results are accurate. Any errors found should be corrected, and the appropriate tests should be repeated until accurate results are achieved.

To verify the completeness of the System Logic & Accuracy Test, confirm the following:

- the tabulator-level result reports match the expected results from the pre-marked test decks.

- exception ballots are properly handled by the tabulator per the DCF/MBS settings.

- the individual tabulator reports from RTR match the tabulator level result reports.

- the summary report for each counting group defined in the Election Project matches the sum of all individual tabulator level reports for that group.

- the Statement of Votes Cast report after adjudication of ballots matches the expected results.

- the ballot image files are clear and readable from both ImageCast Central and ImageCast Evolution.

- the tabulator "Counting Groups" are configured correctly and according to jurisdiction's preference with regards to separating the ImageCast Central count results from Precinct results.

Verifying items above is imperative for obtaining the correct X of Y values in percentage of precincts reported.

6.3.4 Backing up the Logic and Accuracy Test Results

Before resetting the system for election day, make sure that the EMS Administrator has backed up the results from the entire system. This includes the following:

1. A backup of the Election Project containing the results from the executed L&A System Test. The project package created during this back up procedure must be manually copied and saved to a dedicated folder on the EMS Server. Name this folder distinctly so it can be identified in the future.

> ⊙ **Do not rename the project package.**

2. A backup of the ImageCast Evolution by storing the labeled CF cards in a safe place. ICE results that were imported into the EMS RTR during the L&A test will be preserved within the backed up Election Project package. The CF cards need to be clearly labeled so that they can be safely returned to their respective ICE units during the preparation for Election Day.

3. A backup of the entire Adjudication folder from the D:\drive and databases on the EMS server.

4. A backup of all ICC election files containing results from the L & A test by **moving** the entire **C:\ICC Election Files** folder to a safe place. **NOTE: After backing up, make sure that the Administrator deploys the master copy of ICC Election Files to the C: drive of ICC workstations so that the system is ready for Election Day.**

Stopping Adjudication After Logic and Accuracy Testing

Once L & A is complete, the Adjudication Administrator should log into the EMS server and stop adjudication.

Retention and Documentation of Test Materials

Reports generated by products within the Democracy Suite product line during logic and accuracy testing should be retained along with test decks, and any supplementary testing materials, for the retention period required by California law. Place all documentation in envelopes and/or boxes. Seal, initial, and date the envelopes and/or boxes, as required by California law. This retention period should take place in a secured location with access restricted to those designated by the jurisdiction. If the Democracy Suite system is used in a federal election, testing materials must be retained for a period of 22 months as required by federal regulation. A listing of the available reports on ImageCast Evolution can be found in Permanent Printed Reports. A description of available reports on ImageCast Central is available in Section Producing Reports from the ImageCast Central System.

7 Post-L & A Preparation for Election Day

After successful completion of a Logic and Accuracy test:

1. The results of the test must be backed up and archived

2. The election equipment must be properly prepared and stored for an election day.

The procedures for post L & A backup and equipment preparation and storage will differ depending on jurisdiction's configuration and procedures. However, this chapter provides suggested instructions on how to prepare and store the Democracy Suite equipment for an election.

7.1 Election Project and Test Results Backup

After completing the L & A testing, ensure that the EMS Administrator has backed up the test election results. All results will be preserved by backing up an election project package in the EMS EED. By **selecting the Project Package**, rather than pure database backup, all files and additional artifacts from the NAS will be backed up within the project package. Store this package to a safe location and label it properly for easy recognition, however, do not rename the project package.

7.2 Purge the System of Test Results

Once testing is complete, the entire system must be purged of all test results prior to using it for the election. The Election Administrator should ensure that the L & A test results are purged from the following locations:

1. Purging the ImageCast Evolution tabulator level results from each individual memory card. Leave the CF cards inside the ImageCast Evolution, so that the unit can be physically secured for the Election Day as described in Section Physical Security.

2. Clear the number of marked ballots on ImageCast X - see Reset the Number of Printed Ballots on ImageCast X

3. Purging the Results Tally & Reporting database: see Open Project in RTR and Purging Election Results from RTR.

4. ImageCast Central files were backed up and cleared in Section Backing up the Logic and Accuracy Test Results and a new copy of the master set of election files (created in Section Preparing ImageCast Central Election Files for the ImageCast Central Workstation), were deployed at that time.

7.3 Hardware Maintenance and Preparation For Use

After successful completion of a Logic and Accuracy test, election equipment must be properly prepared for an election day. After the preparation, the equipment is then securely stored, as per jurisdictional procedures. This chapter provides instructions on how to prepare the Democracy Suite equipment for an election.

7.3.1 ImageCast Evolution Maintenance and Preparation

The ImageCast Evolution does not require any software or preventative periodic maintenance tasks such as database performance analysis, software backup, or database tuning. However, it is recommended to periodically execute each of the following:

- Paper transport cleaning

- Internal printer cartridge removal/replacement/storage

- Internal battery recharging

Maintenance Equipment

Special purpose test and maintenance equipment for Dominion Voting Systems Technicians, as well as parts and materials required for fault isolation, diagnostic and maintenance purposes, are listed below:

- **Basic Tool Kit**

    - T7, T10 and T20 Security Torx screwdrivers

    - 9/32″ Socket wrench

    - Size #1 and Size #2 Phillips Screwdrivers

    - Extra hardware (T7, T10 and T20 screws)

    - Pair of Pliers

    - Two (2) extra iButton Security Keys

    - DB9 Serial Cable

- PC with Windows 2000/NT/XP/Vista/7 OS and a Serial Port for Diagnostics debugging

- **Parts and Materials**

  - Dust cloth and Alcohol(>70% Ethanol)

  - Diagnostics Test ballot

  - Two (2) Thermal Printer Paper rolls (3″ 75 ft)

  - Two (2) power supplies (19V DC Adaptor)

  - Two (2) 14.8V DC Battery Packs

  - Two (2) Audio Tactile Interface (ATI) units

  - Two (2) Contact Image Sensors (CIS)

  - One (1) Main Processor/Controller Board

  - One (1) Scanner Controller Board

  - Cotton swabs or Soft, Lint-free piece of material

  - Distilled/bottled water

  - Calibration Test Ballot

  - Two (2) inkjet printer cartridges

ImageCast Evolution Cleaning Procedures

This section describes the procedure for cleaning the paper path of Dominion Voting Systems ImageCast Evolution using the specified Cleaning Sheet.
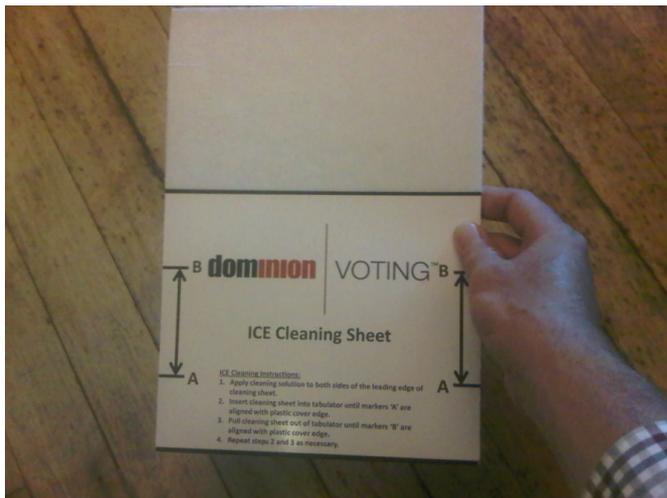
The ImageCast Evolution Cleaning Sheet

To perform the cleaning procedures, be sure to obtain a Specified Cleaning Sheet from Dominion personnel and a sealable eye-dropper or squirt bottle with cleaning solution: >70% Ethanol (Ethyl-alcohol).

- Step 1: Power down the unit, collapse the Touchscreen Monitor into its storage position and turn off the Service ON/OFF switch. Ensure that all LED lights on the unit are *off*.

- Step 2: Fill the eye-dropper with cleaning solution and use it to place one horizontal line of solution along the top 1″ of the leading fabric edge of the sheet.

- Step 3: Insert this end of the DVS Specified Cleaning Sheet into the tabulator.

The Leading Fabric Edge

- Step 4: Continue to feed the sheet into the tabulator until the ″A″ line on the cleaning sheet is aligned with the bottom surface of tabulator's entry slot cover.

- Step 5: Pull the cleaning sheet until ″B″ line on the cleaning sheet is aligned with this plastic cover edge.

Inserting ImageCast Evolution Cleaning Sheet

- Step 6: Repeat steps 4 and 5 as required in a back and forth motion. Note that the leading edge of the cleaning sheet passes over the upper and lower scanners as the sheet is moved between the "A" and "B" marks.

- Step 7: Lift the Touchscreen Monitor into its operating position and power up the unit by turning ON the Service switch.

- Step 8: Run several (10) blank sheets or ballots through the main path to remove any residual cleaning solution.

- Step 9: Verify the scan quality by scanning in valid ballots, and repeat the procedure if required.
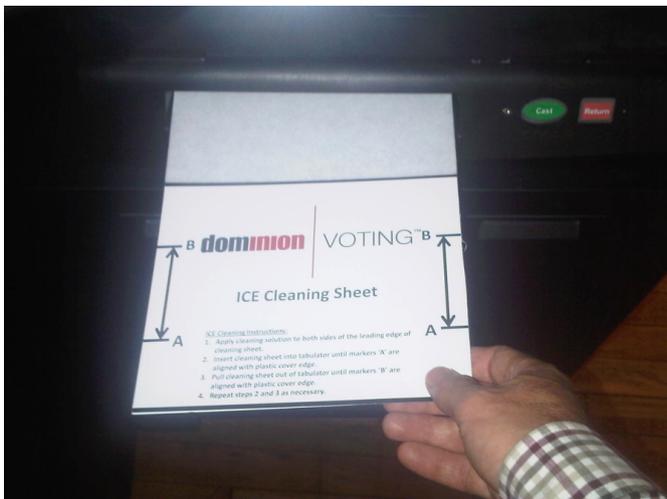
Feeding the ImageCast Evolution Cleaning Sheet Back and Forth

Internal Printer Cartridge Removal/Replacement and Storage

If time between the ImageCast Evolution usage is expected to exceed two months, it is recommended that the Integrated Printer's inkjet cartridge be removed and stored appropriately to prevent it from drying out.

To remove/replace the printer inkjet cartridge:

1. Navigate to the Diagnostics menu on the ImageCast Evolution 's touchscreen.

2. Initiate alignment procedure to allow easy accessibility of the ink cartridge for removal.

3. To access the Inkjet Printer from the rear of the tabulator, unscrew the two T20-type Torx Security screws on the rear access door.

4. On the printer baffle, press the two tabs along the center of the baffle inwards and pull outward to open the door.

5. Press the latch tabs on the cartridge release cover and lift it upward.

6. Using your thumb, slightly press down on the front top edge of the inkjet cartridge to tilt and slide it out of the carriage.

7. Remove the replacement print cartridge from its packaging.

8. Carefully remove the plastic tape covering the ink nozzles.

> ⊘ Do not touch the print cartridge ink nozzles or copper contacts. Touching these parts will result in clogs, ink failure, and bad electrical connections.

9. Hold the print cartridge so that the electrical contact points are facing toward the printer, and then slide the print cartridge into the carriage.

10. Push down on the cartridge release cover until it snaps closed.

11. Close the Printer Access door.

12. Secure the Rear access door back in place with the two T20-type Torx Security screws.

13. On the Touchscreen LCD, press the **I'm Done** button.

To store the printer inkjet cartridge:

1. Place the cartridge in a standard 4 1/8″ x 9″ paper envelope such that its contact and nozzles do not touch the envelope. Squeeze out the air in the envelope before sealing it.

2. Place the paper envelope in an airtight container such as a rigid sealed plastic container, or a re-sealable plastic bag.

3. Place a water-soaked sponge in the plastic container/bag. (squeeze out air in the bag before sealing it).

4. Store the cartridge in a dark area at room temperature (15-35 degree Celsius).

It is recommended that a printing test is run prior to the machine's deployment. This test ensures that the print quality meets expected standards.

Installing the Audio Tactile Interface or the A.T.I

- The A.T.I. device needs to be plugged in before powering up the unit. Open and lift up the fourth (4th) door on the right side of the ICE to expose the A.T.I. port.

A.T.I. Port on the ImageCast Evolution

- Plug in the A.T.I. cable into the A.T.I. port.

A.T.I. Device Plugged into the ImageCast Evolution

- Connect the headphones to the head- phone jack on the bottom right of the ATI.

Connecting Headphones to the A.T.I.

Connecting the Paddles and Sip & Puff

- Paddles can be connected to the ATI via the 3.5 mm Sip & Puff jack located on the unit.

Connecting Paddles

- The Sip & Puff can be connected to the ATI via the 3.5 mm Sip & Puff jack located on the unit.
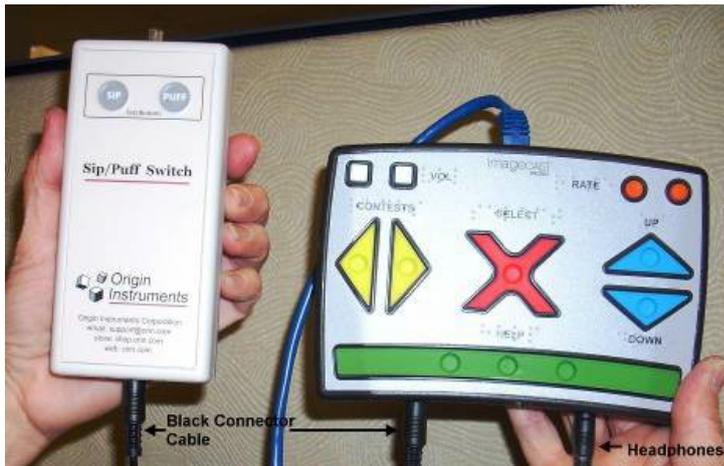
Connecting the Sip and Puff

Internal Battery Recharging

In order to obtain maximum battery life, periodic maintenance of the internal back-up battery is important. It is therefore recommended that the internal back-up battery be charged for at least 12 hours every eight months when the unit is in power-off mode/storage. It is equally important to ensure that the internal battery is fully charged before the unit is deployed on Election Day. The Battery Status is indicated using visual indicators on the ICE side panel.
To charge the battery, connect the unit to a standard 120V, 60Hz AC Power Supply and ensure that the Touchscreen LCD is in its horizontal position and the Service Switch in the ON position.

7.3.2 ImageCast Central Maintenance and Preparation

Maintenance procedures for the ImageCast Central scanner configurations can be found in the commercial, off-the-shelf product documentation.

7.3.3 ImageCast X Maintenance and Preparation

The ImageCast X does not require any software or preventative periodic maintenance tasks such as database performance analysis, software backup, or database tuning. However, it is recommended to periodically execute each of the following:

- ICX Internal Battery Recharging
- BMD printer cartridge removal/replacement/storage

For more details, please refer to the SID-21V-Z37-A1R user guide.

BMD printer cartridge removal/replacement/storage

For proper printer cartridge removal, replacement and storage, please consult the manufacturer user guide for the corresponding printer.

- **HP LaserJet Pro M402dne** - http://h10032.www1.hp.com/ctg/Manual/c04639074

ICX Internal Battery Recharging

In order to obtain maximum battery life, periodic maintenance of the internal back-up battery is important. It is therefore recommended that the internal back-up battery is charged for at least 12 hours every eight months when the unit is in power-off mode/storage. It is equally important to ensure that the internal battery is fully charged before the unit is deployed on Election Day. The Battery Status is indicated using visual indicators once the ICX is powered up.

To charge the battery, connect the unit to a standard 120V, 60Hz AC Power Supply and wait for the device to power up. Insert Technician Smart Card and enter the corresponding PIN. Once the Technician menu is available, select "Power off" and wait for the device to power down.

7.4 Physical Security of Equipment

Once the system has been purged of L & A results and the ImageCast Evolution, and ImageCast X maintenance and preparation has been completed, all equipment needs to be physically secured in final preparation for the Election Day. Please refer to Section Physical Security for these procedures.

8 Absentee and Mail Procedures

8.1 Preparing Absentee/Vote by Mail Ballots for Tally

Absentee ballots must be properly prepared for ballot tally. Absentee ballots improperly prepared can cause ballot jams resulting in damaged ballots. Perform the following steps to properly inspect Absentee ballots and to ensure proper functioning of the ImageCast Central :

- Ballots must be inspected for foreign objects such as staples, tape or paper clips. All foreign objects must be removed from the ballots. If the ballots have stubs, these should also be removed.

- Folded ballots must be unfolded, oriented with folds in the same direction, and re-folded in the opposite direction, against the crease, to flatten the ballot.

- Ballots must be inspected for damage, such as torn or frayed edges or cuts from opening the envelope. The readability of the ballot may be questioned if the ballot markers or voting areas on the ballot have non-acceptable marks. For example:

    - Bad or illegible printing on the ballot.

    - Voter marking in the ballot ID, or ballot marker areas of a ballot.

    - Damaged ballot.

    - Wrong marking pen used (e.g. red ink or highlighters).

    - Greasy fingerprints, spots, or other contamination.

    - Incorrect ballot trimming.

- All damaged or unreadable ballots should be dealt with according to respective jurisdiction's procedures.

8.2 Setting up the ImageCast Central Workstation and Scanner

Setting up the ImageCast Central workstation and scanner was performed during the installation of the system as per *Dominion Voting Systems Democracy Suite Installation Procedures*.

The following steps should have been executed during that process and are repeated here for completeness. If your ImageCast Central system has been set up, go to Section Loading an Election to the ImageCast Central System.

1. Attach the power cord into to the ImageCast Central workstation, and plug it into a working AC Outlet. Plug the mouse, keyboard, CF card reader, and iButton Security Key reader into the USB ports of the workstation and arrange them for comfortable and accessible use.

2. Plug in the scanner and attach the USB cable to the scanner's USB port on the back of the scanner. Plug the other end of the scanner USB cable to a USB port on the workstation.

3. Power on the scanner and wait for 'READY' to appear on the scanner LCD.

4. Power on the ImageCast workstation.

5. Log into the ImageCast Central workstation as the "iccadmin" and enter your password.

8.2.1 Setting up the Scanner

The following sections assume that the ImageCast Central system has been installed and configured according to the *Democracy Suite ImageCast Central Installation and Configuration Procedure*, and that the scanner has been configured as specified in the same document.

8.3 Loading an Election to the ImageCast Central System

This procedure assumes that the ImageCast Central election files were prepared in and a new copy was transferred to the Central workstation after L & A testing (see Section Backing up the Logic and Accuracy Test Results, step 4). They are located in the **C:\ICCElectionFiles** folder.
To load election files for Absentee/Mail tabulator, do the following:

1. Backup and remove the existing DVS folder if required (see Section Backup ImageCast Central Tabulator Folders).

2. Navigate to the **C:\ICC Election Files** and open the desired tabulator folder.

3. Move the **DVS** folder to the root of the C: drive.

⊘

Once finished scanning on the tabulator, make sure you move the **DVS** folder back to it original location in **C:\ICC Election Files**, before loading election files for another tabulator. See Section Backup ImageCast Central Tabulator Folders.

8.4 Opening ImageCast Central Application

You should also have the "Administrator Security Key" (aka iButton) programmed by EMS to match the installed election files. An accompanying passcode is required in order to use the iButton Security Key and unlock the election files at ICC startup.

1. Run the ICC application by clicking on the icon pinned to the Window's Taskbar.

2. Accept the UAC confirmation dialog by clicking "Yes." Preliminary initialization will occur.

3. Once complete, you will be asked to select a tabulator to load. Click the **Import** button.

4. Browse to the folder containing the desired tabulator information. This should be a folder that contains a **project** subfolder. Then click **SelectFolder**.

5. A prompt will appear to apply the Administrator Security key to the 1-Wire Reader. When prompted, enter the passcode it was delivered with.

6. Finally, enter a name that will help easily identify that specific tabulator in the list.

7. Repeat the last 4 steps until all necessary tabulators have been imported.

8. To begin, select a tabulator from the newly populated list, and click **Load.**

9. A prompt will again appear to apply the Administrator Security key to the 1-Wire Reader. When prompted, enter the passcode it was delivered with.

10. If this is the first time you are using the ImageCast central a dialog box may appear asking for the Local Configuration Path. Enter **C:\DVS** into the Local Path dialog or browse to that location. Once entered, the dialog box will disappear, and the ImageCast will begin running its power-on diagnostic tests.

11. Apply the iButton Security Key when prompted by the application during the initial execution. This action will decrypt the election files.
    NOTE: The application will not continue if an incorrect security key has been

applied. Errors encountered here indicate that the iButton Security Key needs to be re-programmed in EMS EED with the correct coding associated with the election files you wish to load. For instructions on how to program the iButton Security Key, please see Section Programming of iButton Security Key.

12. Once the passcode is correctly entered, the ImageCast Central application enters Administrator Mode and presents the **Scanning** menu as depicted in the image. This menu provides information on the number of ballots scanned, the batch number and size, and the amount of ballots accepted. The application remains in Administrator Mode unless the iButton Security Key is removed. If removed, the ImageCast Central application enters User or Poll-Worker Mode.
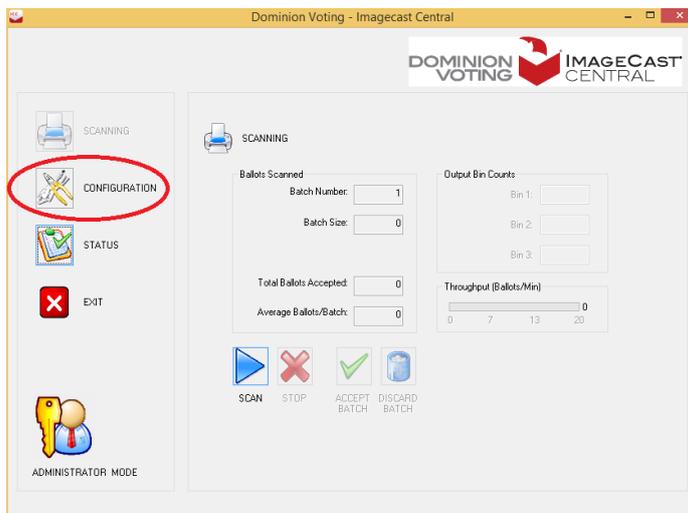
The Scanning Menu (Administration Mode)

13. On the left hand side of the screen, click the **Configuration** icon.

8.5 Configuring the Local and Remote Path for Saving Results

Navigate to the **Configuration** menu found on the left side of the application screen. The 'Paths' area depicts both the Local and Server Paths. Set Local Path reflects the path to the tabulator folder within the "C:\DVS" that has been loaded to the ICC Application (see step 8 in previous section).
If your network configuration prevents automatic loading of results and images to the database, the results should be copied to the removable media and load them to the RTR from the directory.

For automatic loading of results and images to the database and to pass the images off to the Adjudication application, set the Secondary Path to the location on the EMS server by navigating to **\\EMSServer\NAS\Project Name** into the text area

labeled 'Server Path,' where 'Project Name' is the name of your Election Project.
Also, ensure that automatic loading of results has been enabled in the RTR
application.

✓ **If you cannot navigate to the EMS NAS location, it is likely that the problem
is in the network setup, where the ICC workstation cannot access the server.**
Please refer to the *Democracy Suite ImageCast Central Installation and
Configuration Procedure* 1.2.3 Network Environment, 2.3 Network Planning, 6.7
Network and File Sharing and Section 6.10 Mapping the EMS NAS Folder.

Click on the 'SCANNING' icon and the dialog box asking for confirmation of the
server path change might appear.

Click **Yes** to confirm the change.

Setting Local and Remote Result Paths

8.6 Accessing Supervisor Mode

To obtain Supervisor access, the presiding election official must connect the iButton
Security Key to the reader, enter the Administrator passcode and click on the **OK**
button.
On the Configuration menu, click on the **Administrator Mode** icon (the little bald
man). This will prompt a Security Password dialog to appear. Enter the supervisor
passcode and click on the **OK** button. The Configuration menu will change into a
Supervisor Mode (the icon will change into a man with brown hair)
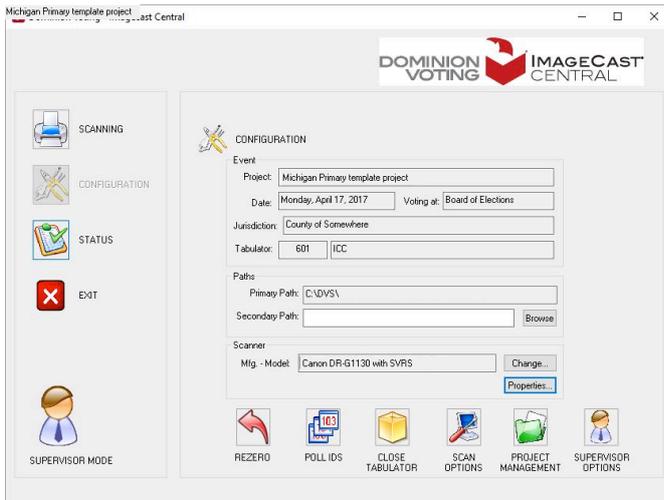
Administrator Mode

To return to the **Administrator Mode**, simply click on the **Supervisor Mode** icon. The **Administrator Mode** icon will take its place, indicating that the application has returned to Administrator Mode.

8.6.1 Setting Supervisor Options

Click **CONFIGURATION** to display the **Configuration Menu.**

> ✅ If this button is greyed out, you are in the Configuration Menu already.
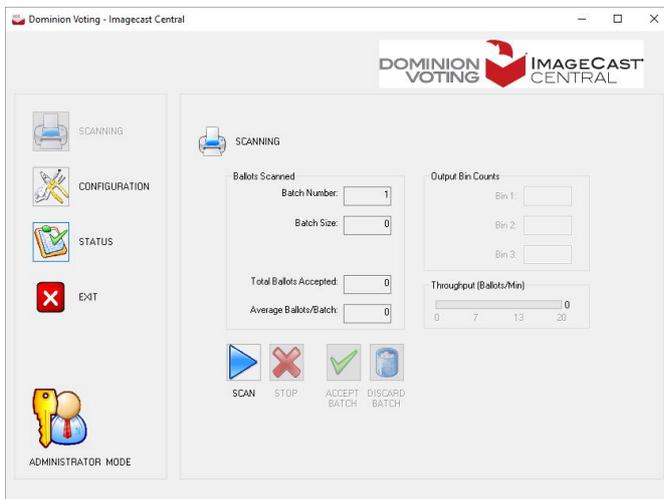
Entering Configuration Mode

Click the **Properties** button on the right hand side of the screen under the **Scanner** area to display **Scanner settings** dialog.
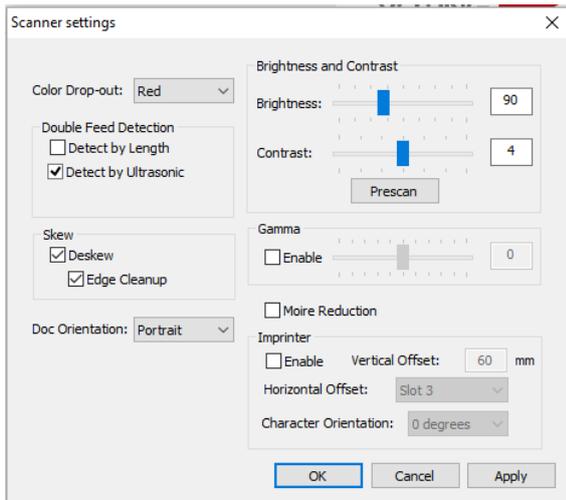
The Scanner Properties Menu

The settings presented here may need to change depending on a number of conditions, such as ballot print quality. However, the following settings are recommended:

- **ColorDrop-out**: Red
- **DetectbyUltrasonic**: Checked
- **SeparationRetry**: Checked
  (not available on all scanners)
- **Deskew**: Checked
- **EdgeCleanup**: Checked (not available on all scanners)
- **Brightness**:
  - Set to 90 for DR-G1130
- **Contrast**: Set to 4
- **Gamma**: Unchecked
- **MoireReduction**: Unchecked

The **Prescan** button can be used to test settings, by allowing for a ballot to be scanned so its image can be visually inspected but without the ballot actually being counted.
Click **OK** to confirm the prompt informing of the changes applied.

8.6.2 Canon DR-G1130 Scanner Imprinter

The Canon DR-G1130 scanner imprinter provides confirmation that a ballot has been scanned and captures the following information surrounding this event:

- Scanning date

- Scanning time

- Tabulator number

- Batch number

- Ballot position in the batch

The imprinter prints these details onto the ballot, post-scanning. These details are also added to the ballot image digitally.

Setting up the imprinter in ICC

Use the following procedure to configure the imprinter in ICC.

This procedure assumes the following:

- Imprinter is correctly installed into the DR-G1130 scanner

- Imprinting location on the pre-printed ballots has been determined to prevent interfering with the pre-printed content

- Imprinter is manually set to the necessary horizontal slot in the scanner

1. Once the application has loaded the appropriate election and with the Administration key applied, enter the Supervisor credentials to access Supervisor mode.

2. In Supervisor mode, click **Configuration.**

3. In the **Configuration** pane, click **Properties,** within the **Scanner** panel. The **Scanner Settings** window appears.
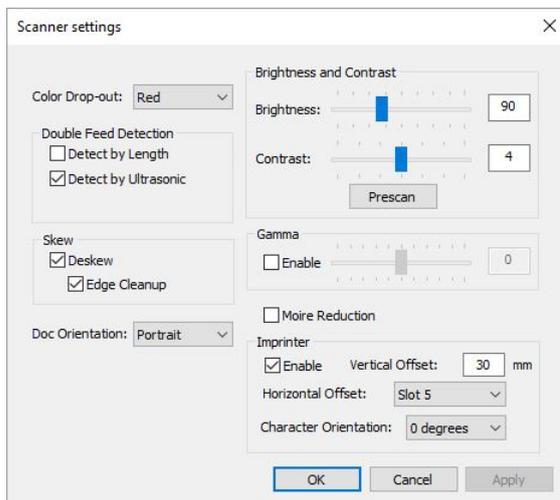
4. Select the **Enable** checkbox to activate the imprinter.

5. In the **Vertical Offset** field, enter a value in millimeters (mm) for where the imprinter is to print on the ballot's vertical plane and in the ballot's digital image.

6. From the **Horizontal Offset** dropdown, select the slot the imprinter is physically set at on the DR-G1130.
   This determines where the printing occurs on the ballot's horizontal plane and in the ballot's digital image.

7. From the **Character Orientation** dropdown, select the orientation the imprinter will print on the ballot and in the ballot's digital image.

8. Click **OK.**

Imprinting Format

The following is the imprinting format used when capturing the scanning details on the ballot and added to the ballot image digitally:

MMM DD/YY HH:MM:SS TTTT – B – PPPP

- MMM DD/YY: Date stamp when the ballot was scanned
- HH:MM:SS: Timestamp when the ballot was scanned
- TTTT: Tabulator number the ballot was scanned on
- B: Batch number the ballot is located in
- PPPP: Ballot's position in the batch

Example: **MAR 16/18 10:55:02 5501 – 1 – 0001**

Handling Misreads

When a misread occurs, the following message appears:
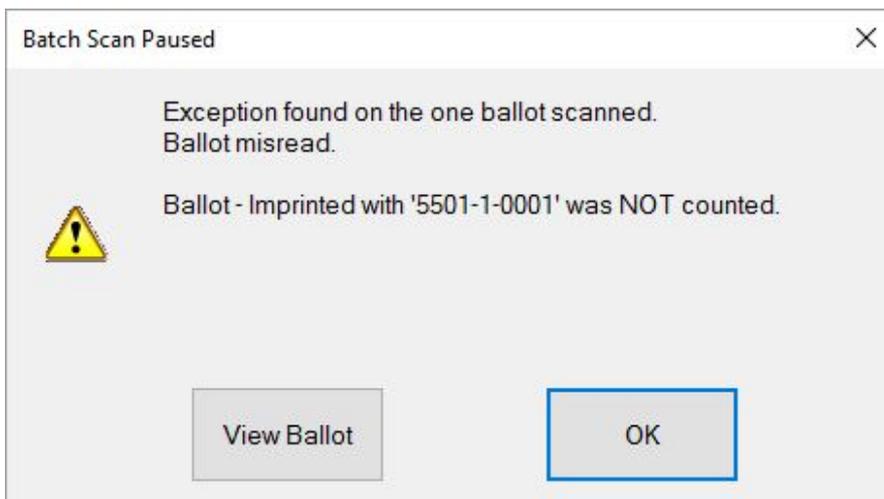
1. Click **OK.**

2. Using the imprinter details in the message, locate the misread ballot in the scanner's output tray.

3. Remove the misread ballot and all proceeding ballots from the output tray.

4. Manually indicate on the misread ballot and all proceeding ballots that the imprinted content is invalid.

5. Reorient the misread ballot and all proceeding ballots so that the imprinting does not reoccur in the same location, and return them to the input try.

6. Continue scanning

8.6.3 Configuring Scan Options

The ImageCast Central can be configured to stop scanning on various types of voting errors. These errors include misreads and defective ballots. The user must have Administrator or Supervisor privileges to configure scan options.
When the Adjudication application is used, there is no need to stop on any conditions since these can all be handled by Adjudication. Therefore, the supervisor needs to turn off any such condition.
To turn off "Stop On" conditions in the ImageCast Central application perform the following:

1. Click the **CONFIGURATION** icon located on the left side of the ImageCast Central application screen.

2. The **CONFIGURATION** screen appears.

3. Click **Scan Options** to display the **Scan Options** dialog and then click on **Scanner Properties** button.

4. Unselect any stop on conditions checked in the "Stop Scan on.." section of the dialog.

> ⊘ If write in resolution is not allowed, then check the box "Stop on Write In"

5. Confirm that the 'Continuous Scan' and 'Only one scan per batch' options are checked.

6. Click **OK** to exit.

7. Return to Administrator Mode by clicking the Supervisor Mode icon. No passcode will be required.

8.7 Producing a Zero Report

To produce a Zero report, see steps in Producing Reports from the ImageCast Central System.

8.8 Scanning Mode

Scanning Mode is the basic operator mode. In this mode, ballots can be scanned, batches can be either accepted or discarded, and the status menu can be accessed. Note that all scanner settings must be configured by either authorized Administrators or Supervisors prior to scanning ballots.

User privileges are limited to protect the integrity of the election process. Once the Administrator removes the iButton Security Key from the iButton Security Key reader, the security level defaults to Scanning or User Mode.

> ⊙ **Following sections assume that the Automatic Loading of results/images has been set in the RTR application. Thus, all scanned images from ImageCast Central tabulators (apart from, if required, ImageCast Central that handles write ins only) would be automatically loaded to the database and passed on to the Adjudication application.**
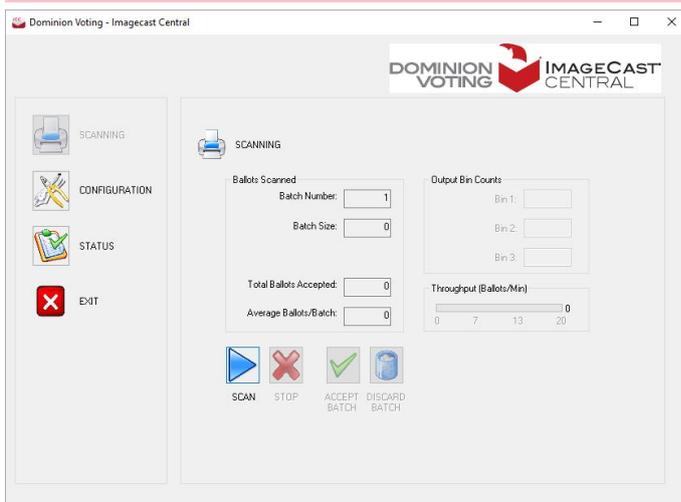
The Scanning Mode shows basic status and scanning functions

8.8.1 Scanning and Accepting Batches

> ⊙ The scanner should be cleaned prior to beginning scanning and after every 2000 ballots scanned.

The scanning process for the Absentee and All Mail ballots may start 7 days prior to Election Day and is continued until the jurisdiction-defined 'Cut Off ' period, at which time the results scanned up to that point are reported on Election Day. All incoming

Absentee and All Mail ballots are scanned on the Absentee/All Mail ImageCast Central tabulator(s) that are connected to all precincts.

To begin scanning, navigate to the Scanning menu by clicking the **SCANNING** button on the left side of the screen.

> ⊘ If the **SCANNING** button is greyed out, then the tabulator is closed and needs to be reopened in order to continue. If this is the case, perform the steps 1 through to 6 below. If the **SCANNING** button is not greyed out, and the tabulator is open, proceed to step 6 to start scanning ballots.

The Configuration Menu in Administrator Mode after the Tabulator is Closed

1. Click **CONFIGURATION** on the left side of the application screen.

2. Click **RE-OPEN TABULATOR** the bottom right of the Configuration menu.

3. The confirmation prompt, will appear.

4. Click **OK** if you wish to re-open the tabulator. If not, click **Cancel**.

5. Click on the Supervisor icon to change to Administrator Mode.

6. Load a stack of ballots, approximately 1 to 1.5 inch thick, into the scanner feed tray and click **SCAN**.

7. The scanner will begin to scan the ballots the user has loaded into the scanner while the ImageCast Central application counts the ballots in real-time. This information can be tracked in the 'Ballots Scanned' field within the **Scanning** menu.
   NOTE 1: If the tabulator displays an 'Invalid Ballot' error (see Section Invalid Ballot Errors**) this means that one or more ballots scanned belong to a precinct that is not handled by that tabulator. If this is the case, check that the ballots in the batch belong to the precinct which the tabulator being used is handling.**

8. Once all of the ballots loaded into the scanner have been scanned, the user has the option to either click **ACCEPT BATCH** or **DISCARD BATCH** on the Scanning menu. Accepting the batch saves the results and ballot images in two separate folders on the locations specified in primary and secondary paths. Each batch will be numbered in the order it was scanned and processed.

9. To Accept a batch, click **ACCEPT BATCH** at the bottom of the Scanning menu. Put all of the scanned ballots from the output tray of the scanner into the pre-labeled completed batch envelope, and put it into the box of counted batches.

10. A prompt will appear asking the user to confirm that they wish to accept the scanned batch. Click **OK** to confirm, or **Cancel** to return to the Scanning menu.

11. To discard a batch, see instructions in section Scanning and Discarding Batches.

8.8.2 Scanning and Discarding Batches

In some cases, a user may want to discard a batch. An example of such a situation is when a batch is accidentally scanned twice or when the tabulation of the batch is brought into question. To discard a batch:

1. Once a batch has been fully scanned, click **DISCARD BATCH** located at the bottom of the Scanning menu.

2. A prompt appears. Click **Yes** to confirm or **No** to return to the Scanning menu. Clicking **Yes** excludes the batch from the results totals and requires the batch to be re-scanned.

3. If 'single scan per batch' is selected (in scan options), SCAN button will be greyed out until either 'accept' or 'discard' is selected.

8.8.3 Spoiling a Batch

Sometimes an ICC operator may mistakenly accept a batch. This batch may have been incomplete, contained ballots from the wrong Counting Group, contained ballots that have already been counted or some other reason.

1. If the batch has been scanned, but not yet accepted, discard the batch as explained in Section Scanning and Discarding Batches.

2. If a batch was incorrectly accepted and needs to be excluded from tally, the steps for fixing that will depend on whether that batch has already been submitted in Adjudication or not. Stop scanning and inform the ICC Administrator of the error immediately.

> **IMPORTANT: Do not rezero the tabulator. Do not attempt to manually delete the batch.**

3. The ICC Administrator will record the number of the batch to be spoiled, using the procedures established by the jurisdiction.

4. Once the ICC Administrator has verified the current batch number and recorded the batch number to be spoiled, they may give approval to continue scanning batches.

5. The ICC Administrator will inform the Adjudication Administrator of the offending batch number(s) for each tabulator.

6. The Adjudication Administrator should work with the RTR/EMS Administrator to fix the problem by following instructions in the Sections Submission and Publishing of Batches and Dealing with Batches Mistakenly Accepted on ICC.

7. After scanning has been completed for all ICC tabulators, the Election Administrator will reconcile the number of batches and ballots tabulated.

> ⚠ If a large number of batches, or all batches from a tabulator, must be spoiled, please contact your Dominion Voting technical representative for assistance in resolving the issue.

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8.9 Post-Tabulation Report and Closing Procedures

8.9.1 Closing the Tabulator

1. Once scanning is completed on the tabulator, it can be closed. The tabulator can be re-opened at any time to resume the scanning. To close the tabulator, apply the iButton and type in the password to enter the Administrator or Supervisor mode.

2. Navigate to the Configuration menu by clicking **CONFIGURATION** on the left side of the application's screen.

3. Click **CLOSE TABULATOR** on the bottom of the Configuration menu.

4. You will receive a message prompting you to confirm your decision to Close the Tabulator. Click **OK**.

8.9.2 Producing Reports from the ImageCast Central System

1. Close the tabulator using the **CLOSE TABULATOR** button on the Configuration screen. A window will open confirming the tabulation closure, click **OK**.

2. Navigate to the Status menu by clicking on the **STATUS** icon.
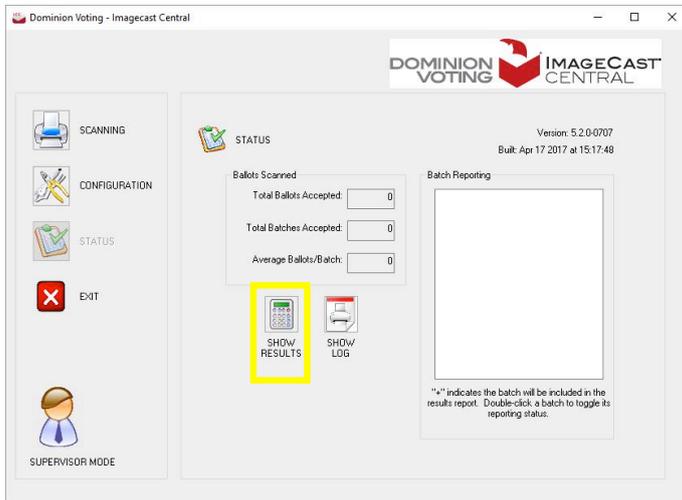
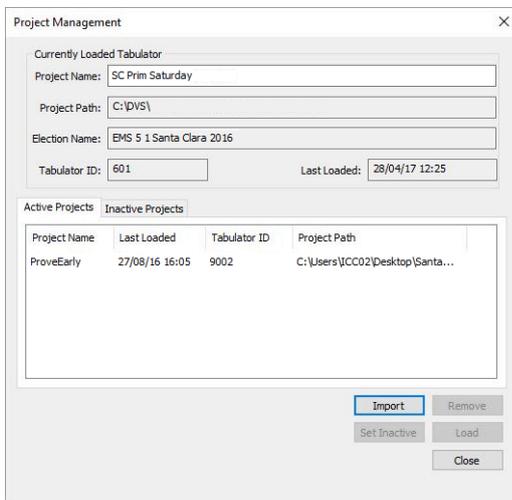The Status Menu in Administrator Mode

3. Click **SHOW RESULTS** located at the bottom of the "Ballots Scanned" section. The 'Display Batch Results' dialog appears in a new window.

    a. If you are producing a Zero Report, verify that the 'Display all ballot ids and Precincts (even those with no ballots scanned) option is selected and click **OK**.

    b. If you are producing a Results Report, select the Batch, Results, and Contest display options desired, and then click **OK**.

4. The result data will be shown in Notepad. Save this file as Zero report if produced prior to running an election to prove that no results are present on the ImageCast Central system, and print a copy for auditing purposes. If the result report is produced after running an election and closing the poll, save the report, and name it accordingly.

The Status Menu in Administrator Mode

8.10 Loading Election Files for a New Tabulator

In the **SUPERVISOR** mode, click on the "Project Management" button and the Project Management dialog will appear.

The Status Menu in Administrator Mode

Click on the **Import** button and browse to the "C:\DVS" and select the specific tabulator folder you wish to load and click on the **OK** button.

In the "Active Project" list, select the tabulator name and click on the **Load** button. The new election files will be loaded.
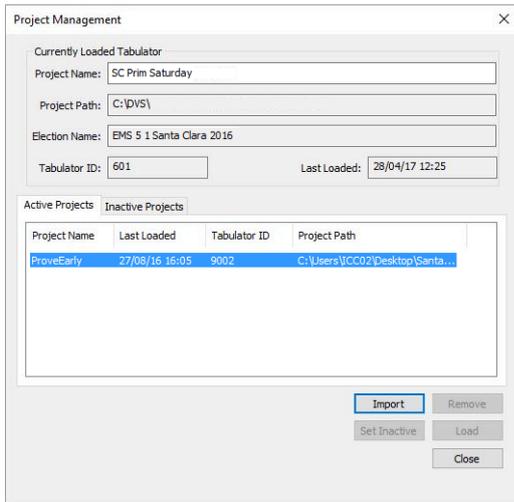
⊘ **NOTE:** If loading the election files for the ICC tabulator assigned to handle write-ins, ensure to change the Secondary path to a folder other than the folder assigned for automatic loading into the RTR.

9 Procedures for Early Voting

9.1 ImageCast Evolution

Democracy Suite EMS allows for the programming of specific ImageCast Evolution tabulators for use "in-office" in Early Voting or in Vote Centers. Ballot tabulation for a specific precinct, a range of precincts, or all of the precincts in the election may be programmed. The setup and use of an Early Vote ImageCast Evolution tabulator is the same as use of an Election Day ImageCast Evolution tabulator as described in Chapter 9, with the exception that the tabulation will take place for a period longer than one day.

> ✅ *When powering up the Early Vote ImageCast Evolution for the first time, the Zero Report tape is printed. An Early Vote ImageCast Evolution is connected to many or all precincts and, therefore, may contain a very large number of Ballot IDs that would require many rolls of thermal printer paper in order to print the full report. You may be provided with an option to cancel/disable the printing of the report (see below for steps on how to use this functionality to avoid printing of the zero tape). An alternative to the printed report tape is accessing the Report on LCD screen through the Utility option from the Administrative Menu.*

To turn off printing of the tape, do the following:

1. When powering up Early Voting ICE, apply the iButton Security Key when prompted to do so.

2. Enter the Administrator user name and password and once logged in, the Poll-worker Menu will appear.

3. Press 'Open Poll' to open the Poll Management screen. You will be presented with the following three options:

   a. Poll Status

   b. Print Zero Tape

   c. Number of Copies to Print

4. To change the option on 'Print Zero Tape' from 'Print' to 'Don't Print', simply press the change button. Pressing 'Change' a second time will change it back to 'Print'.

Depending on the size of the election and the number of ballot styles an Early Vote ImageCast Evolution is handling, it may be impractical to close the polls and power down the Early Vote tabulator after the end of each Early Voting day due to the length of time it takes to load election files on the tabulator during the power up process. If this is the case, the Poll should be closed at the end of the day, however, the ImageCast Evolution tabulator should stay turned on. After the Poll has been closed, the Administrator should physically secure the ImageCast Evolution tabulator as per jurisdiction's procedure, until the start of the next day, when the tabulator is taken out of the secured area and the Poll is re-opened on the tabulator to continue with the operation. In case your Early Voting ImageCast Evolution tabulator is handling the number of ballot styles which allows the tabulator to load the election in a reasonable amount of time, then the procedure for operating an Early Vote ImageCast Evolution is as follows:

1. Apply the iButton Security Key to get to the Administrative Menu screen.

2. In the Administrative Menu, press the circular power button icon in the top right corner of the screen and select the option to Shut Down the unit.

3. This will initiate the countdown until the machine has fully powered down.

4. Close the privacy screen flaps, and place the LCD monitor in the horizontal storage position.

5. Replace the ballot box cover onto the ballot box, and then lock it and seal it until the next day.

6. Next day, remove the seals, unlock and remove the ballot box cover.

7. Lift up the LCD monitor into the vertical position and the unit will begin to power up.

8. Open the privacy screen flaps and insert the iButton Security Key when prompted to do so.

9. Enter the Administrative user name and password to get to the Administrative Menu screen.

10. Press the Open Poll from the Administrative Menu and the message will appear warning that the poll was already opened and that the results are not zero. Confirm by pressing 'OK'.

11. The tabulator will start printing a status report. Cancel the printing of the status tape if your election has a large number of Ballot IDs.

12. Confirm the Cancel option and the poll will be reopened.

13. In Administrative Menu, press on the 'Standard Voting' option and then press **Start** button.

14. Press **OK** to confirm and ImageCast Evolution is ready to resume scanning.

Voting on the Early Vote ImageCast Evolution continues until the jurisdiction-defined 'Cut off' time. At this point, the Administrator closes the poll on an Early Vote ImageCast Evolution. The Administrator will remove the CF cards from the Early Voting ImageCast Evolution tabulator and securely store them in a labeled and sealed transport container.

The Election Official will then remove all of the ballots from both the Secondary and Main ballot box chambers of the ballot box and safely store them in clearly labeled bins/boxes. The ballots and the CF cards will be sent to the central location for processing if not located there in the first place. The results from Early Vote ICE tabulators will be imported, validated and published in RTR on Election Day.

9.2 ImageCast X Early Voting

Since ImageCast X is a Ballot Marking Device, the procedure is the same as for ImageCast X Election Day procedure.

10 Election Day Use Procedure

10.1 Precinct Supplies, Delivery and Inspection

Tabulator delivery and Election Day poll worker procedures should follow jurisdiction's practices in conformance with State Election Code. Sections starting from Precinct Supplies through to Section Inspection and Polling Place Setup provide some general information about delivery, supplies and handling procedures for ImageCast Evolution. Election Day procedures for the ImageCast Evolution begin with the Section Opening the Polls.

10.1.1 Precinct Supplies

Prior to Election Day, the Precinct Board ensures the precincts have the correct supplies, and ensures that each Polling Place is ready for operation by performing the following tasks:

- Checking all pads of paper ballots to ensure that ballot style identification numbers, serial numbers, and precinct numbers (if used) printed on the paper ballots are correct.

- Reporting any problems to the Election Official responsible for the election.

- Having supplies necessary for the conduct of elections that shall be delivered as follows at Polling Places:

1.
  - Paper ballots shall be in the quantity and manner required by the California Elections Code, as well as demonstrator ballots marked for demonstration use only.

  - Demonstration or voting instruction placards.

  - General purpose precinct supplies as provided in the California Elections Code.

  - Secrecy sleeves or envelopes, if ballots are printed on two sides

  - Marking devices: Sharpie Fine Point Permanent Marker (Black), Staedtler Lumocolor Dry Safe Marker.

  - A certificate of packaging and sealing, in duplicate, together with a postage paid self addressed stamped business reply envelope, or postcard addressed to the responsible Election Official.

  - Sample ballots of each ballot style as required by the California Elections Code.

- Seals and any other supplies and forms deemed necessary.
- Tables.
- Power cords.
- Machine/seal log.
- Voter instructions.
- Machine stickers.
- Machine File Folders for Official Pre-LAT tapes.

10.1.2 ImageCast Evolution and Related Equipment

The following facilities, furnishings, fixtures, and utilities are required at the polling place for the operation of the ImageCast Evolution :

	ImageCast Evolution and power supply
	ImageCast Plastic Ballot Box
	ImageCast Ballots
	Compact Flash Memory Cards
	iButton Security Keys
	Sharpie Fine Point Permanent Markers
	Thermal Printer Paper Rolls
	Replacement Ink Cartridge

	Color-Coded Plastic Security Seals
	Audio Tactile Interface (ATI)
	L-R Paddles (Optional)
	Sip and Puff (Optional)
	Headphones
	Keys for Ballot Box
	120V AC Power Wall Outlet
	Extension Cord (Optional)
	Election tape and Signage, as required
	Voting booths, as required

10.1.3 Delivery of Equipment

The Warehouse Technician must perform a Pre-Election procedure for preparing the tabulators prior to shipment. Summary of these activities include, but may not be limited to, the following:

1. Completing the final inspection sheet (provided by the jurisdiction).

2. Entering the equipment serial number and software version of the Operating System in the daily log.

3. Placing keys (iButton Security Key and ballot box key) in an envelope with the final inspection sheet.

4. Removing the memory cards that were used for testing, then inserting the Memory Cards for the official election and securing as required by jurisdiction.

> ✓ Verifying the Memory card is installed and coded for the specific location.

5. Checking the printer paper (replacing if needed).

6. Closing the ImageCast units, gathering the envelope containing final inspection sheet and keys.

7. Securing the ImageCast units for delivery to polling places or storage.

10.1.4 Proper Handling and Moving Procedures

The ImageCast Evolution tabulator is designed to be delivered to and from the polling site mounted to the ballot box. The ballot box has 2 lockable swivel wheels and 2 fixed wheels for easy handling and also has convenient handles on all 4 sides of the box to enable lifting or positioning as required. The ImageCast Evolution should be removed from the ballot box when in storage. The tabulator also has 2 hand grips located underneath the lengths of its sides to enable a two person lift if required for moving, installing, or removing from the ballot box.

10.1.5 ImageCast X and Related Equipment

The following facilities, furnishings, fixtures, and utilities are required at the polling place for the operation of the ImageCast X:

	ImageCast X
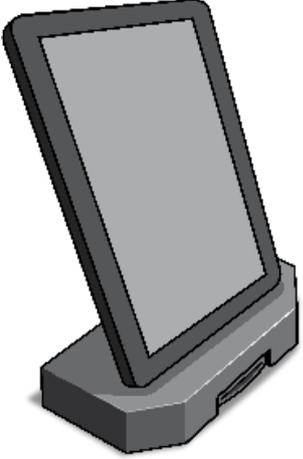
	HP LaserJet Pro M402dne (with power and printer cable)
	Blank ballot paper
	ech, Poll worker and Voter Smart Cards
	Appropriate Replacement Toner Cartridge
	Color-Coded Plastic Security Seals

	Audio Tactile Interface (ATI)
	L-R Paddles (Optional)
	Sip and Puff (Optional)
	Headphones

	Keys for Ballot Box
	120V AC Power Wall Outlet
	Extension Cord (Optional)
	Election tape and Signage, as required

	Voting booths, as required

10.2 Inspection and Polling Place Setup

After the units have been delivered to the polling place, the Poll workers will perform the following inspections:

- Position the ballot box in the appropriate location for use making sure that there is access to the AC power plug.

- Inspect and record all seals are intact as per jurisdictional procedure.

Specific Polling Place Setup Procedures will be provided to or by each respective jurisdiction. However, it is recommended that a two-person team be available for setting-up the ImageCast Evolution .

> ⊘ The programmed Memory Cards will have been inserted into the units in advance by the elections department with all security seals in place prior to shipment to the polling place.

10.3 Election Day Poll Worker Responsibilities and Procedures

In general, the precinct board will perform the following tasks at each polling location on Election Day:

1. At least every hour, inspect each booth to ensure there are no electioneering materials present, and that the booth/voting machine is otherwise suitable for voting. As far as possible, defacement conditions shall be corrected according to the jurisdiction's practices and in conformance with California Election code.

2. Offer to instruct each voter in the proper method of voting, including further instruction and practice time, if necessary, and as applicable.

The Poll Worker would be responsible for the following type of assistance when the Voter enters the polling place:

> ⊘ No Poll Worker, or any other person, may record the time at which, or the order in which, voters vote in the polling place

1. Provide the Voter with a ballot, secrecy envelope, and proper marking device to complete the ballot; be sure to include any instructions per jurisdiction or local statute, if required. To ensure a smooth election process, Dominion suggests:

    a. Checking each ballot before giving it to the Voter to ensure there are no torn or faulty edges. Looking for abnormally light printing and improper registration of trim marks. The trim marks show the edges on which the ballot should be cut, or trimmed.

2. If requested by the Voter, use the demonstration ballot to show the Voter:

    a. How to complete the oval opposite the Voter's selected candidate name or proposition.

    b. The different ImageCast Evolution screen views. This may include explaining the meaning of various messages that may appear on the LCD screen and ensuring that the Voter understands all aspects of the voting process.

3. After the Voter has completed the ballot, instruct the Voter to insert the ballot into the entry slot of the ImageCast Evolution tabulator unit, releasing the ballot after insertion. The ballot will be drawn automatically into the unit.

4. Ask the Voter to remain at the unit until the ballot is fully processed and deposited into the ballot box.

a. The Voter may wish to ensure that the ballot count has increased by one, indicating that the ballot has been accepted.

> ⊘ If the ballot is returned, the count will not increment.

b. If any of the second-chance voting scenarios occur (i.e. blank ballot, overvote, undervote), explain to the Voter that the ballot has not yet been counted, and explain the reason for the warning message.

Change Language: In locations where more than one language option is needed, the Poll Worker may need to assist the Voter with language selection.

Activating Accessible Audio Ballots: In locations where accessible voting features of the ImageCast tabulator units are in use, the Poll Worker will need to activate accessible voting sessions and may need to assist the Voter through the audio process.

Monitoring Voter and Machine Operation: The Poll Worker must monitor the operation of the ImageCast tabulator unit in order to ensure that everything is operating correctly. If there were any technical issues, the Poll Worker would follow procedures provided by the local jurisdiction.

Assisting Voters that Require Physical Assistance: The Poll Worker may also need to assist voters that require physical assistance as per local statutes.

10.4 Closing the Polls and Vote Reporting

10.5 Securing Audit Logs and Backup Records

Election audit trails provide the supporting documentation for verifying the accuracy of reported election results. They present an archival record of all system activity that is related to the vote tally. All thermal printer reports should be retained as part of the election record.

The integrity of voting and audit data is kept on nonvolatile data storage mediums. For the Democracy Suite EMS, data is kept on hard drives. The ImageCast voting devices and audit data are kept on the compact flash memory cards. Both hard drives and compact flash memory cards, can be removed from the system/devices and transported to another location for readout and report generation. The ImageCast Evolution maintains a real-time log of its operation, including error and audit log events. The election software application has an integrated logging service, meaning it is active from the moment the device becomes operational. The system also has a battery-supported real-time clock (RTC), and an intrusion detection micro-

controller which allows system events (such as intrusions) to be monitored and recorded off-line. The system integrates an audit log mechanism that records who did what and when on the device, as well as other system level event information.

10.6 ImageCast X Election Day

10.6.1 Opening the ICX poll

Election files must be present on the device prior to opening the poll. For more details on how to load election files onto the device, see ImageCast X Acceptance Testing.

1. Power the ICX device on

2. Power the printer on

3. Wait for the ICX device to finish startup procedure

4. Log into the ImageCast X application using Poll Worker Smart Card

5. Make sure the date and time are correct

6. Select the appropriate tabulator from the list

7. The verification process starts automatically.

    a. Wait for the verification process to complete.

    b. Check the report for errors.

    c. If any error is reported

        i. Remove the Poll Worker Smart Card

        ii. Go back to Jurisdictions Programming Their Own Elections

        iii. Fix the errors

        iv. Reload the election data (see ImageCast X Acceptance Testing)

8. Once the verification process is complete, select the option "Open poll"

9. Remove the Poll Worker Smart Card

10. The device is ready for marking ballots

10.6.2 Standard voting session on ICX

The Voting Session is activated by inserting ICVA programmed Voter Activation Card into the Smart Card Reader.

ⓘ

> If the voter card is removed before the voting session is complete, the voting session is terminated and selections are not stored

Upon inserting a card, the voter is asked to select the language that he/she prefers to perform the voting session in.

Once the voting language is selected, the voter is presented with the voting interface.

Voting Interface

During the active voting session, there are several menus and bars intended for adjusting the voting interface as desired and navigating through the ballot.

At the top of the screen, an **Action** bar is placed containing buttons for changing various graphic and audio settings. These settings can be changed at any point in the voting session and are consistent throughout the whole session.

Action bar
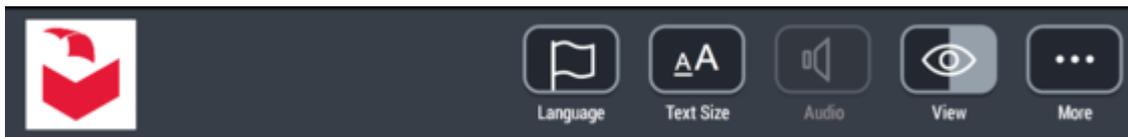
Action Bar

- The **"Language"** button opens a pop-up menu with all the languages defined for current elections. The voter can change the language by pressing a checkbox with the desired language.

- Text size can be changed by choosing one of the options displayed by pressing a **"Text Size"** button.

- **The "Audio"** button is active only in AVS session. For details refer to AVS (Accessible Voting Session) Voting Interface section.

- The **"View"** button allows changing the visual theme of the voting interface.

- Pressing the **"More"** button allows the voter to cancel the current voting session by tapping the **"Cancel Activation"** in the pop-up menu, or display the information about the ICX device and software by pressing the **"About"** button.

Contest bar

Contest Bar

The **Contest bar** is located right under the Action bar and is used for navigation between the contests on the ballot. By tapping on the desired button, the corresponding contest will be displayed on the screen.

Navigation bar
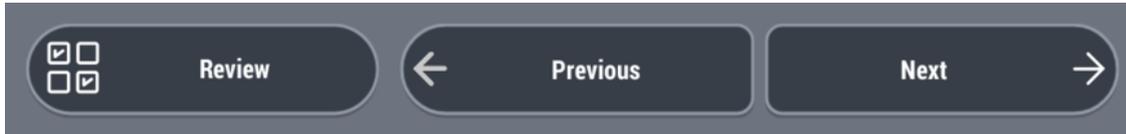
Navigation Bar

Beside the Contest bar, the voter can navigate between the contests by using the **Navigation bar** at the bottom of the screen. Pressing the "**Previous**" and "**Next**" buttons will display the previous/next contest listed in the Contest bar.

Selecting the **"Review"** button will display the Review screen that contains all contests and choices marked by the voter.

The Review screen will also display notifications about any errors or warnings if the ballot is not valid or incomplete.

The voter can navigate through all of their choices by pressing **"Scroll Down" / "Scroll Up"** buttons at the bottom/top of the contest list.

In case the voter wants to change the choices for a specific contest, selecting (tapping) that contest in the review list will return the voter to that specific contest screen.

The same functionality is provided by pressing the **"Back to Ballot"** button in the bottom left corner of the review screen.

In BMD mode, the ballot is printed by selecting the **"Print Ballot"** button in the right bottom corner. Pressing this button prompts a final dialog that, again, displays any warnings for the ballot and provides the options to confirm the ballot printing or to return to the Review screen. Marked ballot is printed by selecting the **"Cast your ballot"** button in the dialog.

Electronic Mobile Ballot

After the voting session is complete, a screen is presented informing the voter of the result of the action. At this point, the voter can safely remove the card.

10.6.3 Accessible voting session on ICX

Prerequisite for Accessible Voting Session (AVS) Voting are:

1. Poll Worker has configured ICX tabulator to use ATI AVS controller

2. AVS controller is properly connected to ICX tabulator and fully operational

3. Either of

   a. Voter starts voting session with smart card configured for AVS voting

   b. Manual session activation is enabled, and poll worker activates voting session by entering the activation code and turns on "Enable AVS Controller" checkbox during ballot activation and press "Activate".

After executing session activation steps as described in Voting section and selecting language, the application presents the screen where a voter can choose one of accessible voting devices (AVS voter). Depending on which accessible voting device is configured by the Poll worker, a voter is presented with options to select preferred device.
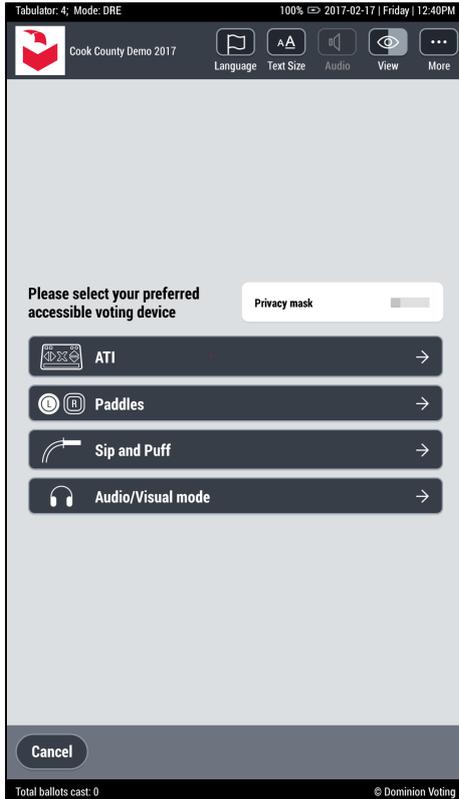
ATI accessible voting devices

Figure 2: ATI device selection

Options on AVS device selection screen include "Privacy mask," which can be used to activate special privacy mode during the session. Privacy mask mode will black-out all display content, except top most menu bar (with election logo and title, and user options buttons).

To activate privacy mode, a user should switch **Privacy mode** switch to ON (indicated by color and right position of a visual "knob") before selecting preferred accessible voting device. Note that not all options are available in Privacy mask mode. Audio/Visual mode will become disabled when Privacy mask switch is turned to ON.

To choose proper AVS device user selects one of:

- ATI *(Audio Tactile Interface)*
- Paddles
- Sip and Puff
- Audio/Visual mode — *only available if Privacy mask option is turned off*

After selecting preferred device, the application will show ballot to the voter. At this point, AVS device is activated, and a voter can independently use ICX with attached AVS device to vote and cast the ballot, with no help from other persons.

Optionally, it selected AVS device is ATI controller, the first screen that will be shown to a voter is "ATI Help and instructions to use." This screen of aid describes all functions of ATI device and can be accessed by a voter at any time during the voting session.
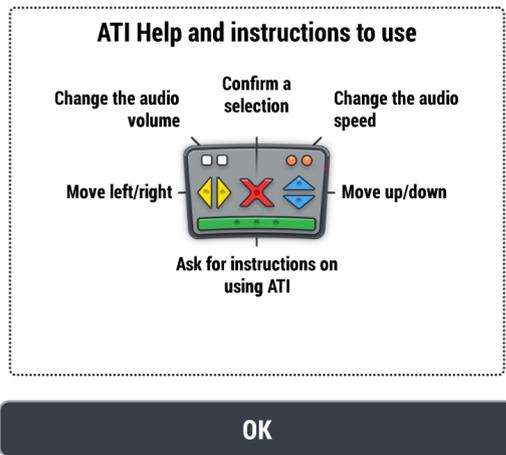
Figure 3: ATI usage instructions

During AVS voting, all interaction with ICX tabulator is done by controlling ICX without the touch screen, using only selected AVS device. Voice is enabled, and content of ballot is spoken through attached headphones.

When AVS voting is activated, headphones volume is set to configured default value. Audio volume and tempo (speed) can be adjusted by a voter at any time during the voting session. Volume adjustment is made using options in the top menu bar by accessing Audio options. Instructions on how to access this menu are provided as spoken text during the voting session. Alternatively, if selected AVS device is ATI, a voter can manipulate audio volume and tempo (speed) by pressing two set of buttons on the ATI controller itself. The layout of buttons on ATI controller and their functions are described onscreen and spoken.

Figure 4: Audio options menu

During AVS voting, the ballot is marked and cast by a voter, using selected AVS device. Instructions are spoken on any user interaction with the device. According to selected device, appropriate instructions are spoken, and a voter can navigate through ballot contests and choices, as well as configurable options for selecting language, text size, audio volume and tempo, screen colors. Also, a voter can end the voting session by choosing to cancel activation in "More" options menu.

The ballot is presented in the following order during AVS voting:

- Initially, the election title information is spoken. Voter can hear instruction on how to use selected AVS device to vote for the first contest or to navigate to any other contest

- If a voter chooses to enter the first contest, contest description and instructions on how to hear choices will be spoken

- If a voter chooses to vote for selected contest and listen to the list of choices, first choice and instructions on how to mark a choice or navigate to next choice will be spoken

- Voter repeats his decision to vote or hear the next choice until all choices of selected contest are presented

- After hearing/selecting all available choices in a selected contest, a voter can easily navigate to a contest navigation buttons and choose to select next contest and repeat the procedure to vote for each contest

- When last contest is reached, after selecting all available choices, next screen is "Ballot review." Ballot review screen can be navigated to at any time by using dedicated navigation button on the bottom of the screen, or by navigating through available screen action buttons as instructed by voice instructions for selected AVS device.

- In ballot review screen first summary ballot validation status is spoken and instruction is given to voter how to hear and review all contests, and when voter reaches last contest, an instruction is given how to cast the ballot.

- When a user activates command to cast the ballot, a confirmation dialog is presented, and the voter has options to accept casting ballot or to review choices by returning to review screen.

- When voter accepts casting ballot, the application shows operation information status screen and speaks success (or in case if something went wrong, warning) message.

- When a voter has finished hearing the message, by navigating to and selecting 'Continue' button, a voting session is finished, and application is redirected to login voter screen, ready for next voter to start voting.

10.6.4 Provisional voting on ICX

In order to activate the provisional voting session, the election official must select provisional voting in ICVA before programming the voter card. All other aspects of voting are the same as for Standard voting session on ICX.

10.6.5 Closing the poll on ICX

1. Log into the ImageCast X device using Poll Worker Smart Card

2. Select the option "Close poll". The confirmation message is shown, please select "Yes"

3. Select the option "Power off" to power off the device. The power off icon is shown on the bottom right corner of the screen. Once selected another confirmation message is shown. Press 'Yes'.

4. Remove the Poll Worker Smart Card

5. Wait for the device to finish shutdown procedure

6. The poll is now closed and the device will no longer accept voter cards

10.6.6 Operating the ICX on Battery

In the case of power failure, the device is equipped with a backup battery and a UPS. The battery and a UPS allow the ICX device to operate for a period of two hours under normal operating conditions (100 voters per hour, and two AVS voters per hour). The switch to battery power is immediate as is the switch back to AC, once the power is restored, no special action is required. Both internal and UPS battery status is visible on ICX screen.

10.7 ImageCast Evolution Election Day

10.7.1 Opening the Polls

In general, the precinct board would perform the following items when opening the polling place:

1. Complete Oath of Office and Declaration of Intention forms pursuant to the California Elections Code.

2. Assemble voting booths, and in each booth display a copy of materials required by the California Elections Code.

3. Provide a pad of demonstration ballots, markers, and have suitable demonstration materials available.

Dominion Voting Systems' plastic ballot box provides 8 hasp-type seal points for security seals. The figures below depict where and how to apply security ties to the plastic ballot box.

1. Break the Green seals on the Ballot Box in order to remove the ballot box lid and access the ImageCast Evolution.
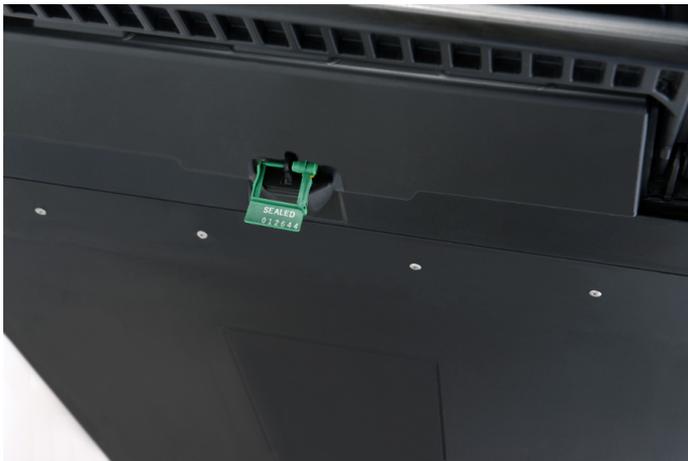
Green Ballot Box Seals

2. Position the ballot box, with the ImageCast Evolution sitting on top, so that an AC Main socket outlet is available to the unit. An extension cord can be used if needed.

3. Verify that all Red and Yellow security seals are intact on the required locations.

4. Remove the three yellow seals from the power cord compartment. The poll worker should inspect each of the ballot compartments main, secondary and auxiliary to ensure that there are no ballots present. Each compartment should then be sealed with one of the yellow padlock seals, and the seal number recorded.

Red and Yellow ImageCast Evolution Seals

5. Plug the unit in the available AC Mains socket outlet.

ImageCast Evolution Power Source

6. Power up the unit by lifting up the monitor to its operating position. You can adjust the angle of the screen if needed and open up the privacy flaps to reveal the touchscreen.

Lifting the LCD Screen on the ImageCast Evolution

7. Once the ImageCast Evolution has powered up, the system will prompt for the iButton Security Key to be applied to the iButton Security Key receptacle.
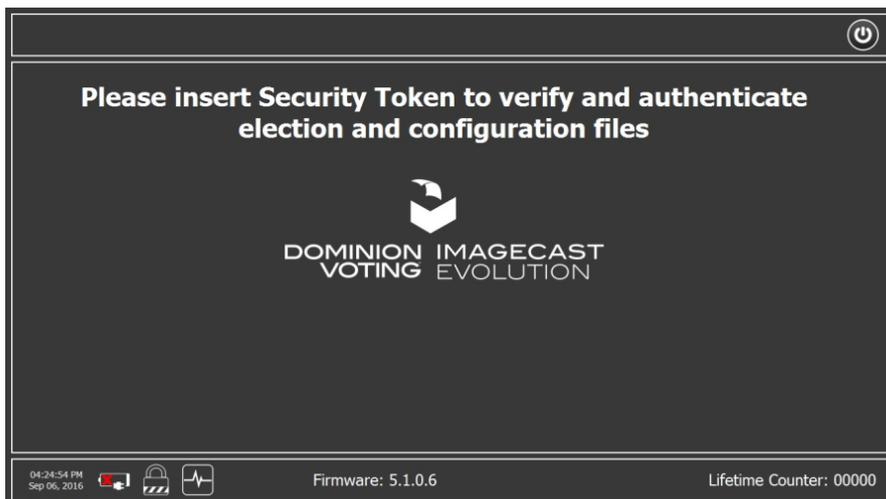
iButton Security Key Prompt

8. Press the iButton Security Key firmly to the receptacle, and hold it in place until the login screen appears on the touchscreen.

9. On the Authorization screen, enter the username and password specific for the project and press **OK**. In the event that the username and password are incorrect, the screen will clear the text and provide a new opportunity to enter the correct username and password.

10. Once logged in, the Pollworker Menu will appear.

11. Press 'Open Poll' to open the Poll Management screen. You will be presented with the following three options:

  a. Poll Status

b. Print Zero Tape

c. Number of Copies to Print
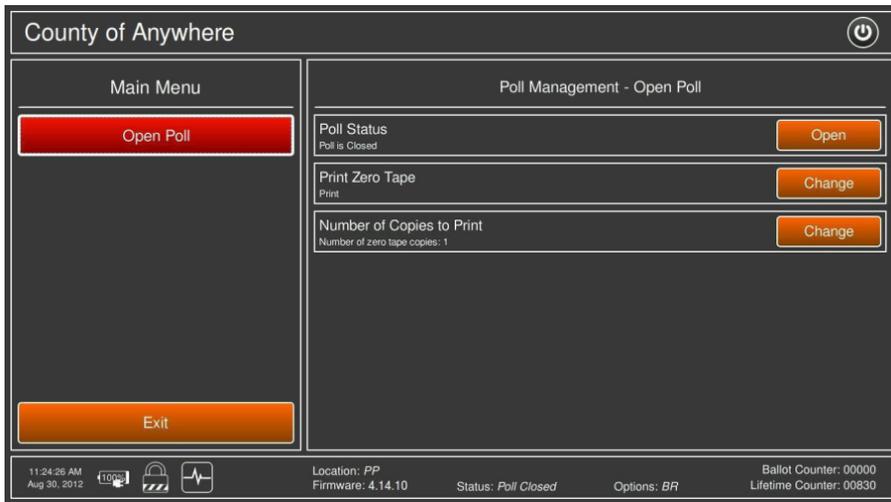
Main Menu

12. To change the number of Zero Tapes to be printed, press **Change** beside the 'Number of Copies to Print' option.

13. You will be prompted to enter the number of Zero Tapes you wish to print. Enter the desired number.
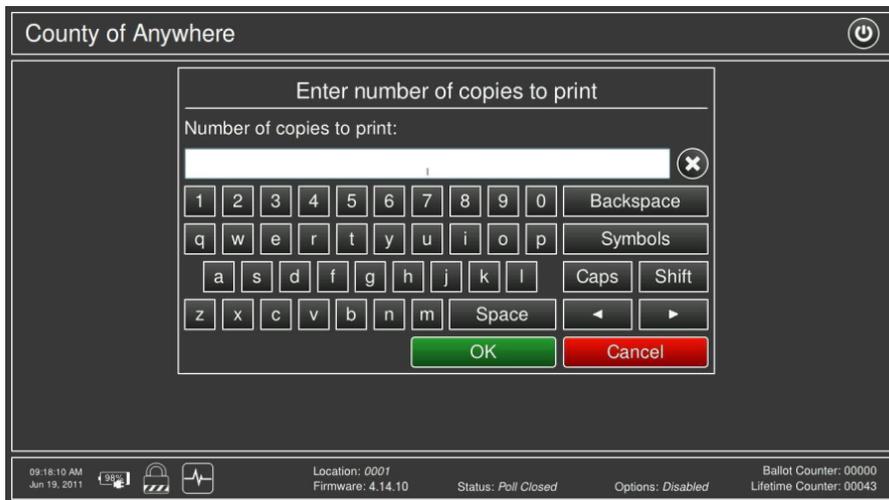
Number of Zero Tape Copies to Print

14. Press **OK** to return to the Poll Management screen.

15. Press the **Open** button beside the 'Poll Status' option.
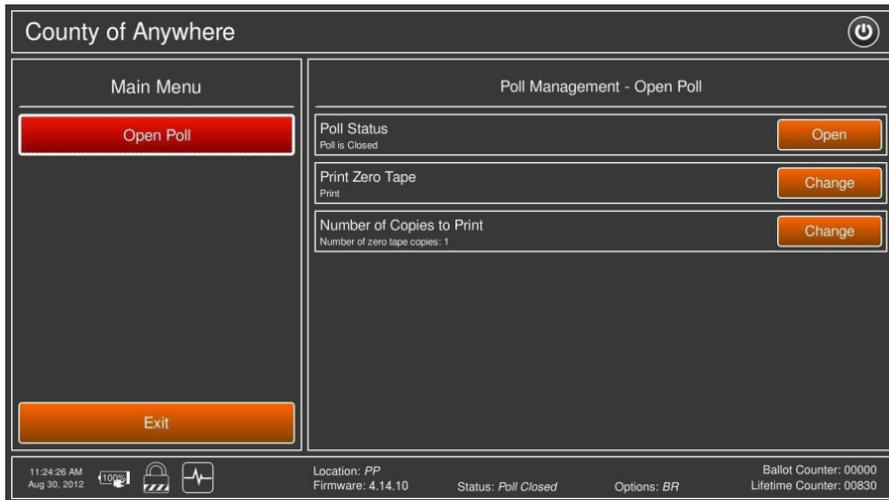
Open button in the Main Menu

16. A confirmation screen will appear. Press **OK** to continue.

17. If the Zero Tape setting was set to "Print" the Zero Tape will begin printing and the Printing in progress screen will appear. Pressing the Cancel button will stop the printing of the tape.
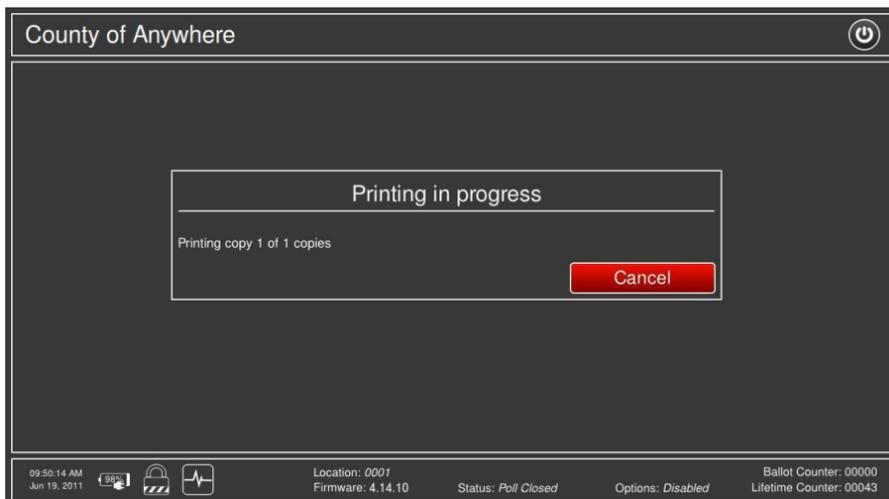
Printing of Zero Tapes in Progress

18. Once the Zero Tape has been printed, the Printing completed screen will appear. To print more copies of the Zero Tape press **Yes**, otherwise press **No**.
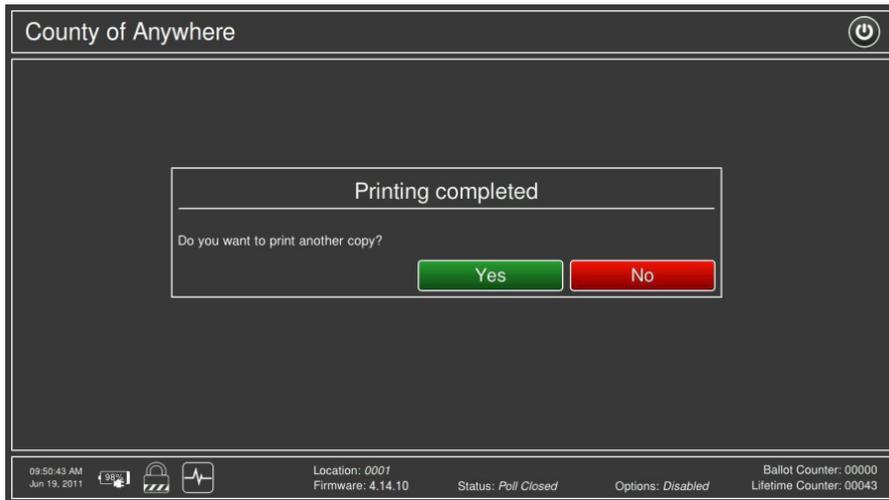
Printing of Zero Tape Completed

19. The Administrative Menu screen appears with the poll open and ready for operation.
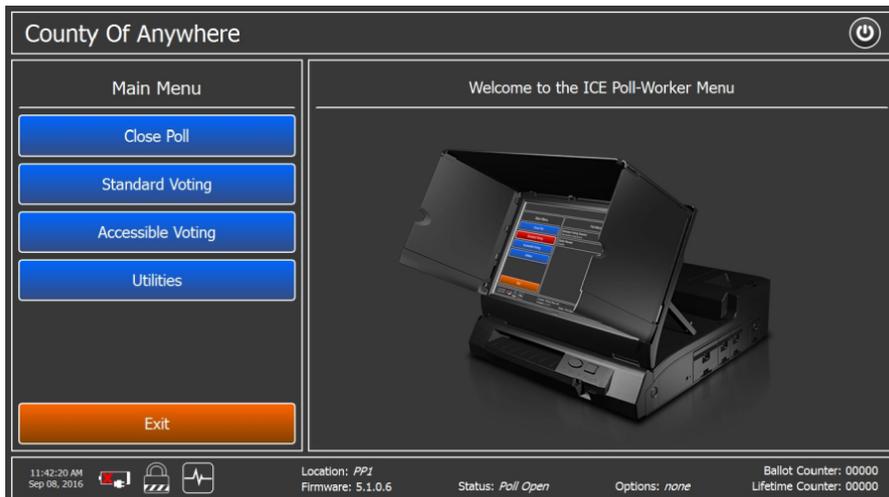
Poll Ready for Operation

20. Place a sample ballot in a location that is visible to voters. The following two sections give some general procedural information related to the polling place.
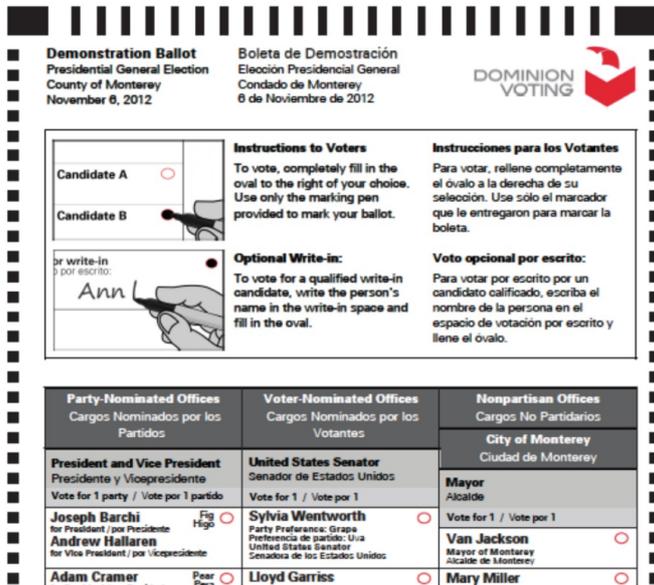
Sample Ballot

10.7.2 Standard Voting Session Using Smart Card
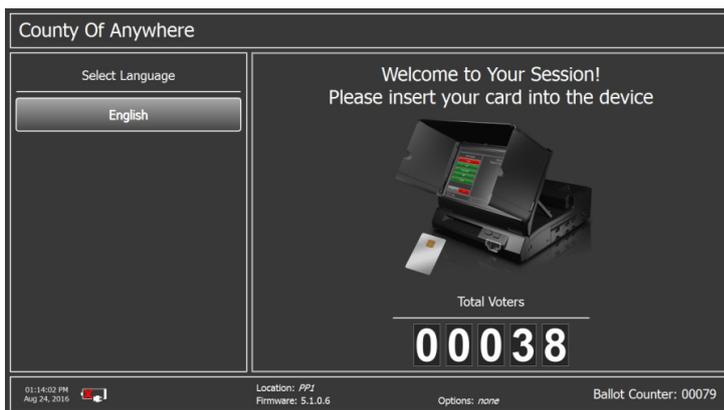
Welcome to Your Session - Insert Your Card.

When starting your voting session, press on Standard Voting button on the left side of the screen and then press on Start button.

Press OK on confirmation message.

Insert the Voter Smart Card into designated card slot. It is located on the right from the ballot entry slot.

NOTE: Smart Card voting mode needs to be enabled in Machine Behavior Settings (MBS). A designated set of options are within "Voting with Smart Card" node. For more details, please refer to Machine Behavior Settings document. ImageCast

Evolution supports cancelling a voting session and resuming it later on another unit. The unit returns any ballot card that has previously been inserted and accepts only those ballot cards that a voter hasn't cast in the previous physical session. Multi-card ballots from different physical sessions are recorded with the same record identifier.

After the card has been inserted, ImageCast Evolution will perform a variety of verification steps.

Verification Messages

After successful verification, a paper ballot needs to be inserted into ballot entry slot. The system will wait a few seconds for the ballot.

⊘ In case verification fails, the system will inform you what has gone wrong.
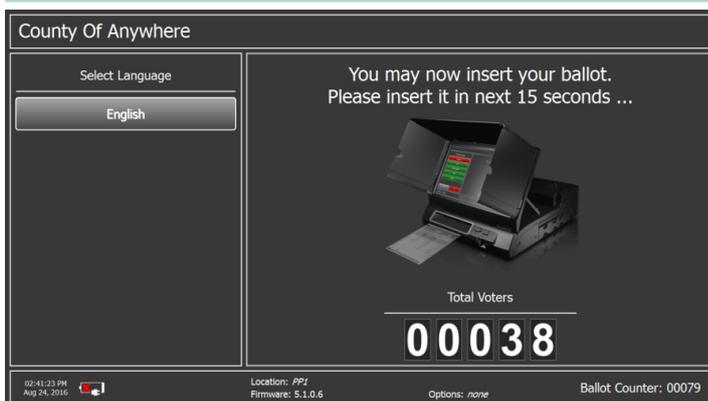
Timout for Inserting Ballot

Finally, you can review your marks. If you want to cast your ballot, press Cast. If not, press Return. In this case, the paper will be returned for your correction.
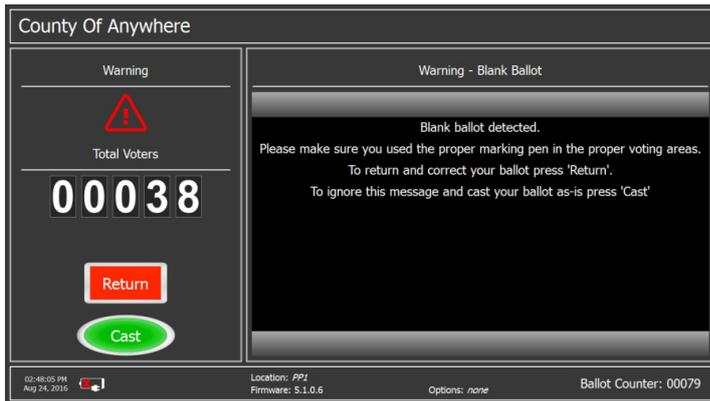
Ballot Review

If you have selected to cast your ballot, a screen that asks you to confirm your action will appear.
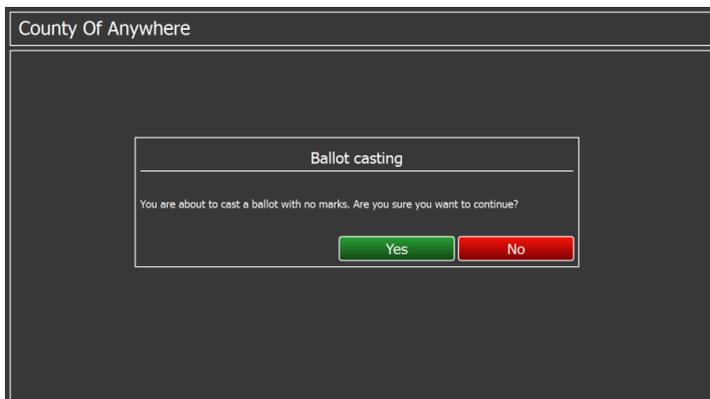
Cast Ballot Confirmation

In case of multicard ballot, a screen that informs you that you can insert additional ballot cards will be displayed. If you want to continue, press Continue button. To finish the session, press Cancel.
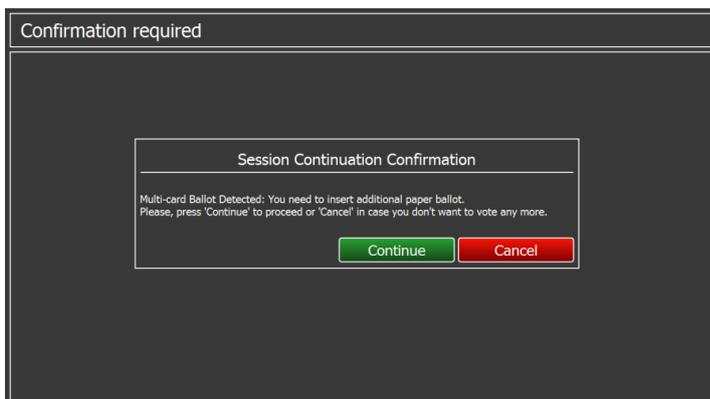
Multicard Session Continuation

Then, following the screen for ballot inserting, a screen counting time designated for the action will once again be displayed.
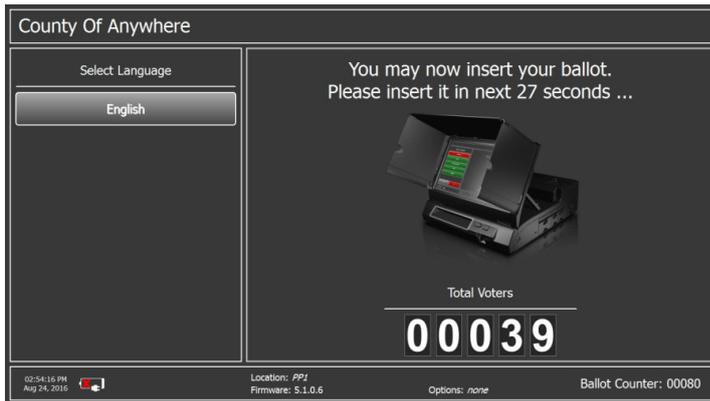
Timout Inserting Ballot

After all ballots have been cast, you can remove your card from device.
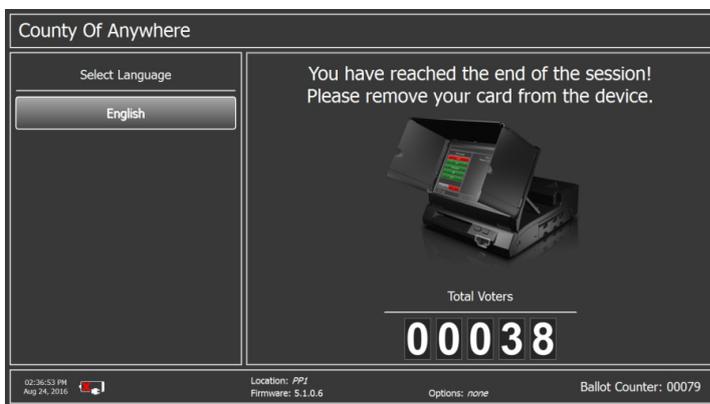
End of Session

Finally, after the smart card is removed, you will be notified that the session is complete. Following that, a new welcome screen will be displayed and a new voting session can be begun.
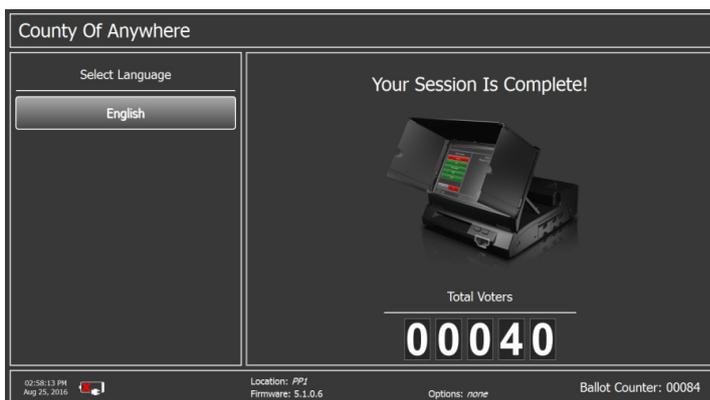
Session is Complete

In case a used ballot is inserted, an error message will inform you that the inserted ballot has already been used and that it cannot be inserted again.
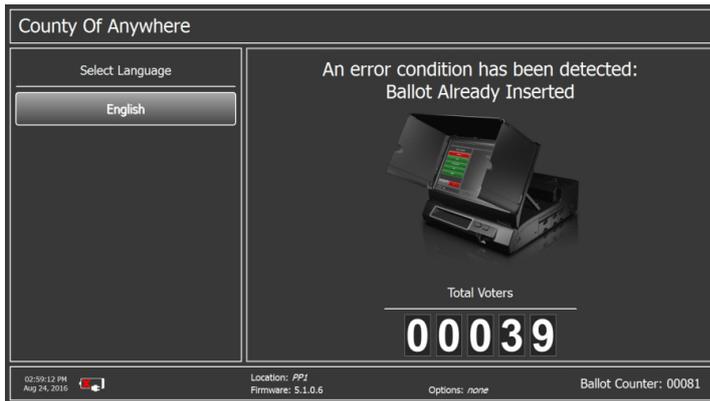
Ballot Already Insrted

10.7.3 Accessible Voting Session

Audio Only Voting using the Audio Tactile Interface

If the voter decides to turn the display off during their voting session, and commence an audio session only, the voter must press the blue down arrow when presented with the option to do so. Audio instructions explain to the voter how they will navigate, and make selections to their ballot. The ImageCast Evolution 's LCD screen will read 'An audio voting session is in progress'. The ATI will operate in the same manner as it does in the Audio and Visual voting session.

Accessible Voting Session - Contest by Contest Mode

To start Accessibility Voting Session or the AVS, please follow the steps below.

> ⊘ For more information on how to define the Contest by Contest voting, please refer to the EMS EED Users Guide.

On the Poll Worker Menu, select the *Accessible Voting* option.
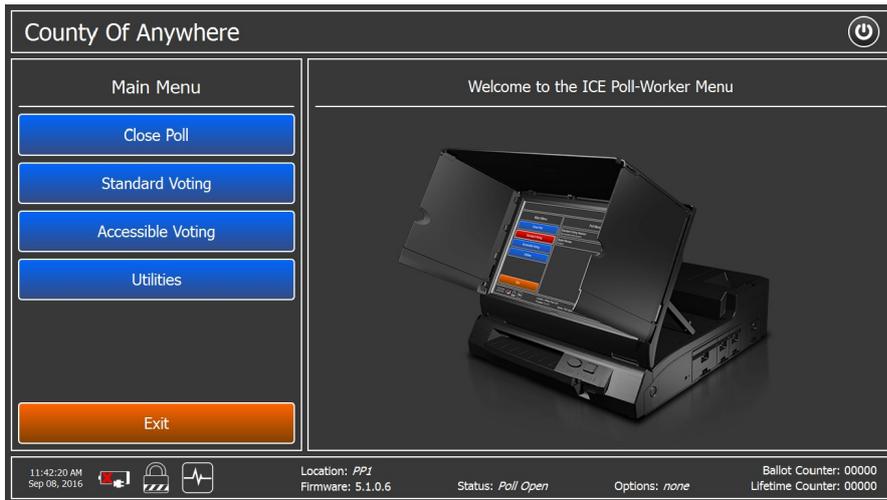
Poll Worker Menu Screen

Press the *Start* button next to the *AV Session* in the Poll Management - Accessible Voting Session screen. Below, the user can see the options that are set for *Ballot Review*. By pressing the *Change* option, additional ballot review options will appear. On the *Start AV Session Confirmation* screen, press *OK* to continue with AV session (in the activity status bar, 'Option' will clearly indicate which option has been set).

> ⊘ *NOTE: Depending on the MBS settings, the Authorization screen can vary. It could be set to prompt for the user name and password or password only. In addition, the MBS can be configured not to prompt for credentials upon starting the AV session. In case when the user is asked for credentials, she/he needs to enter the correct credentials and on the confirmation screen, press* OK *to continue.*
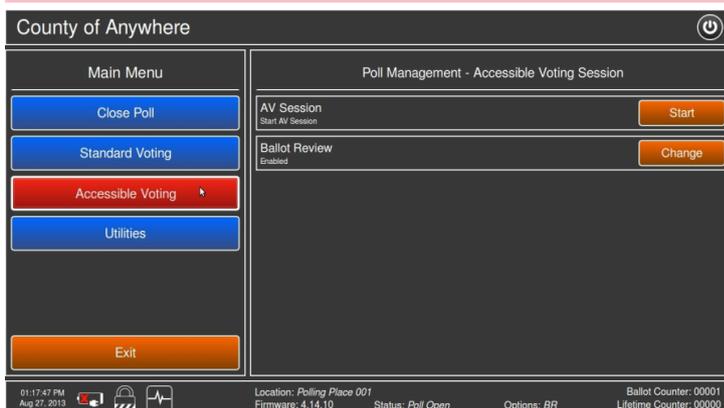

Poll Management - Accessible Voting Session

The Welcome screen will inform that a Smart Card needs to be inserted. If a Smart Card is not enabled, this screen will not be presented. In that case, skip this step and proceed to the next.

⊘ Smart Card voting mode needs to be enabled in Machine Behavior Settings (MBS). A designated set of options is within Voting with Smart Card node. For more details, please refer to Machine Behavior Settings document.
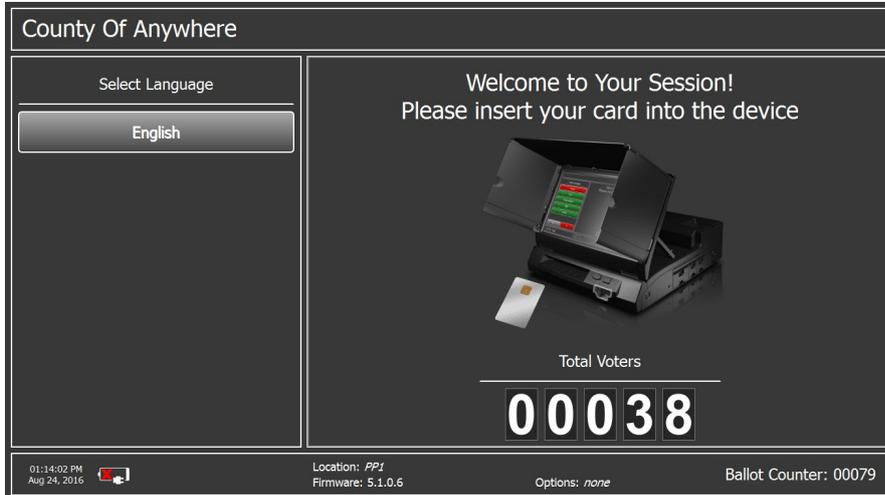

Welcome to Your Session Screen

After the card has been inserted, ImageCast Evolution will perform variety of verification steps. Next, the Accessible Voting screen ("System ready to initiate AV session Please insert a blank ballot") is displayed, prompting the user to insert a blank ballot. Audio with the same instructions will be heard over the headphones. Insert a blank ballot to initiate the session.


Welcome to Your Voting Session

After the ballot has been successfully accepted, the language selection will appear. Selection will need to be done with help of Poll - Worker. Select the language and press **Confirm** button.
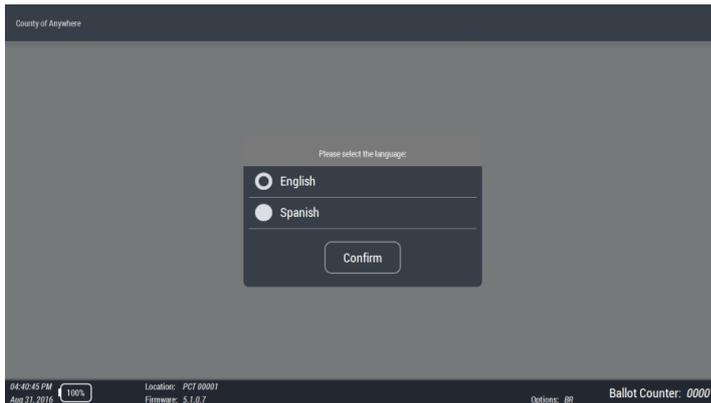
AVS - Language Selection

Help a voter to choose an accessible device. Select ATI option. Note: From this moment, language, text size and color can be changed. These options are available in menu, in top right corner of the screen. *Audio/Video option enables you to vote with audio without using an accessible device. Voter will have audio instructions available, however, a head-set needs to be connected to ATI device.*
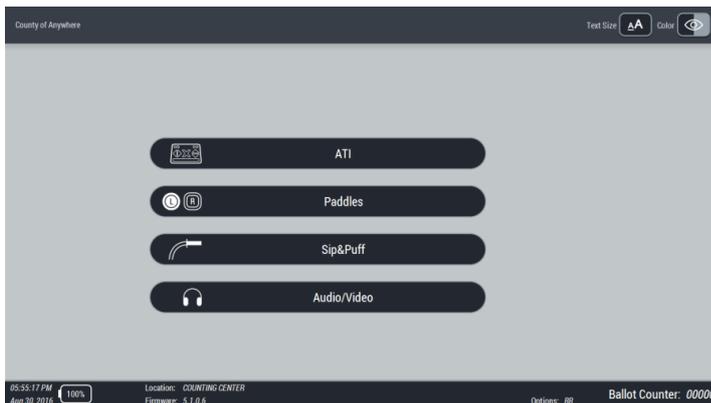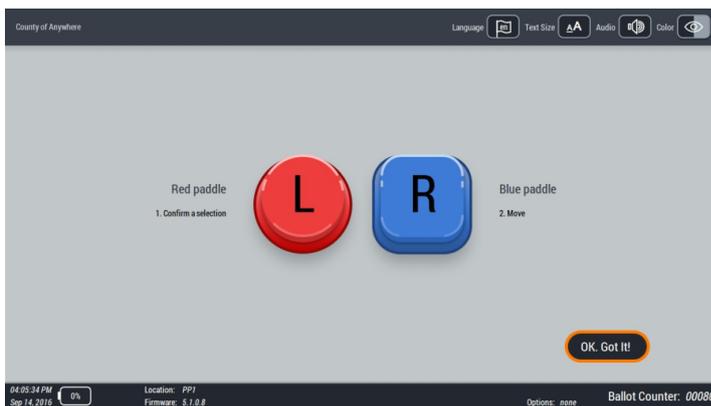

AVS - Device Selection Screen

From this point forward, a voter can vote independently, without any Poll Worker's assistance. The following screen will give you the overall instructions on using the ATI device. All instructions are followed by audio. To change User Options/Setting options: *Language, Text Size, Audio, Color* options, press **blue up arrow** to navigate to **Settings** menu. To move between options within Settings, use **left/right yellow buttons**. Press **blue down arrow** to navigate to **OK, got it** option.
Once you have completed selecting Options/Settings, press the **X** shaped select button.
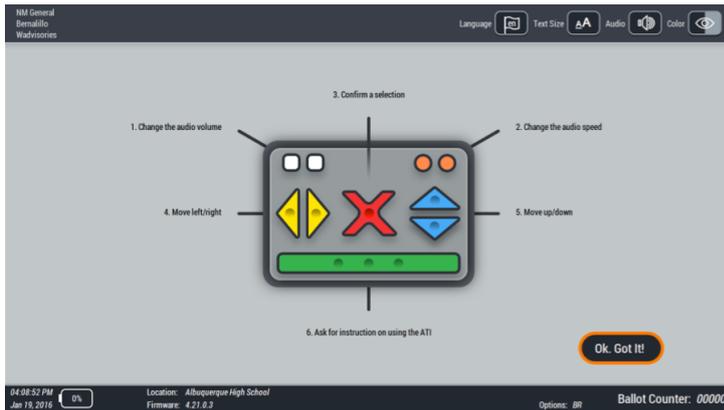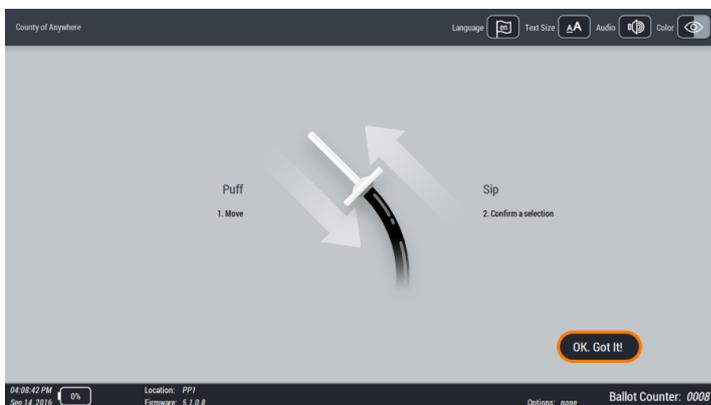
AVS - ATI Instructions Screen

In case you have chosen to use paddles, the following screen will appear. If not, please skip this screen and move to figure AVS - Display On Selection Screen.
To confirm a selection, press red left paddle. This will lead you to voting screen. From there, use press blue paddle to move and red left paddle to confirm the selection.


AVS - Paddles Instructions Screen

In case you have chosen to use **sip and puff**, the following screen will appear. If not, please skip this screen and move to figure AVS - Display On Selection Screen.
To confirm a selection, sip. This will lead you to voting screen. From there, **puff to move** to next item on the screen and **sip to confirm** the selection.


AVS - Sip and Puff Instructions Screen

Next, you can choose if voting session will be presented on the screen or audio only.
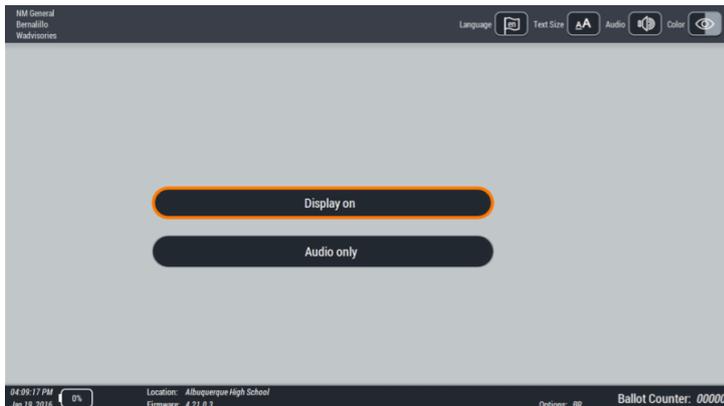

AVS - Display On Selection Screen

Select the **Display on** option. To proceed the session where screen content is covered with a privacy mask, select the **Audio only** session. Press **X** shaped select button to proceed with a **Display On** session or press the blue down arrow, arrow to move to **Audio Only**. Press the **red X-shaped select** button to confirm your selection.
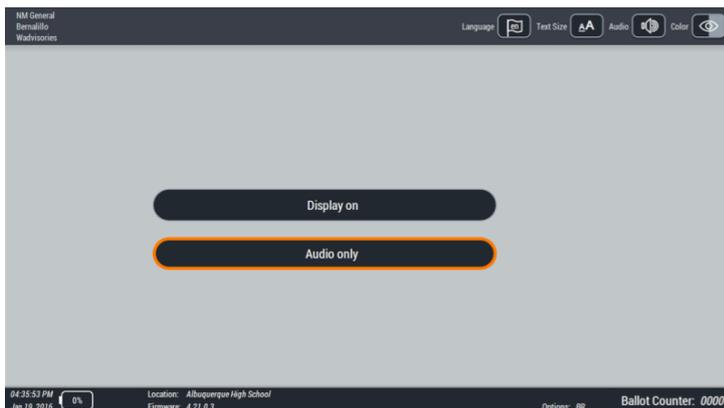
AVS - Audio Only Selection Screen

In **Audio Only** session, the **privacy mask** will appear on the screen, covering the content. An icon showing a closed eye is presented on the right up side of the screen. Audio instruction will guide you throughout the content.
To inform a poll worker that you would like to switch to **Display on** mode, press the green Help button on the bottom of the ATI. Poll Worker's light will change into red. He/she needs to select a **Closed eye** icon. Voter will be informed over audio that screen content is visible to others. In case you have selected the Help button on the ATI, a screen as displayed in figure AVS - Audio Only Selection Screen will appear. Press the red X shaped select button to move to next screen.
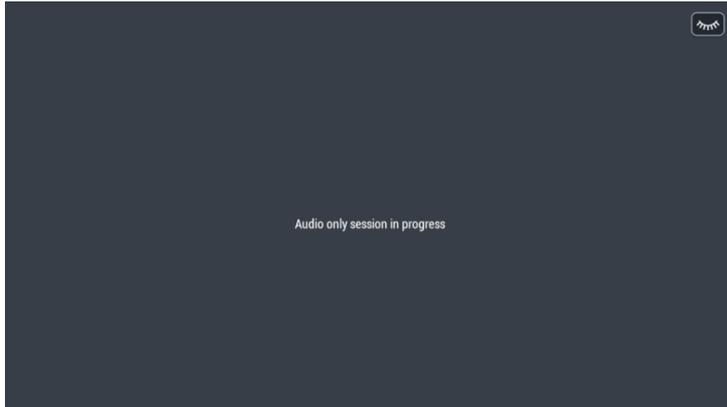
AVS - Audio Only Screen

The next screen lead you to the voting session.

1. The screen is divided into the following areas:

2. User Options/Settings (options or Display on/Audio Only sessions, Language, Text Size, Audio, Color)

3. Contest List (list of available contests)

4. Contest Description area (vote for information or ballot status: if a ballot is undervoted, over- voted, blank, etc.),

5. Action buttons: (Review, Back, Next, Mark and Cast) and Candidate List (list of available candidates).

6. Choice list (list of candidates)
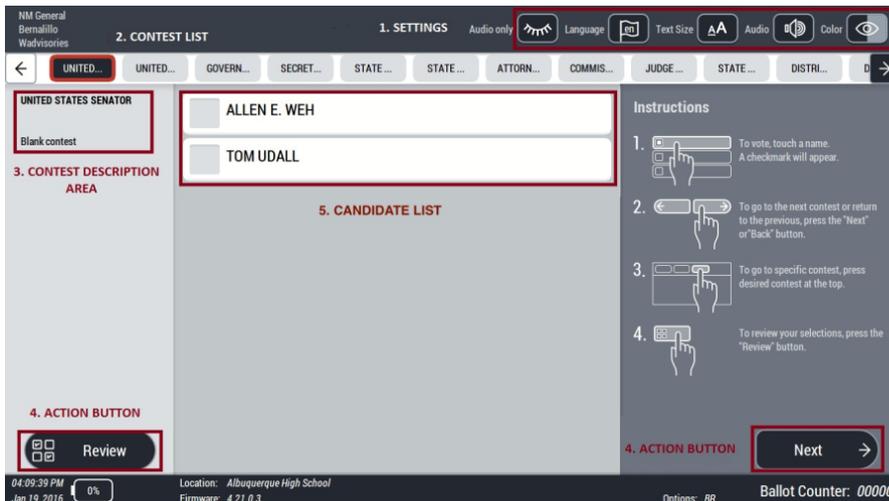
AVS - Voting Screen Sections

Options in **Setting** menu are available throughout the voting lifecycle. You can change language, enlarge text using **Textsize** option, adjust **Audio volume** and **Voice s peed**, **Color** where a screen content presented in color, black on white, or white on black. To move between options within Settings, use **left/right yellow buttons**. You

will be informed about overall contests number as well as about contest where you are currently navigated and how to get back to the first contest (audio instructions could sound as follows: "Contest 78/80 Advisory Question" or "You have reached the end of contest to return to the first"). If you want to skip a contest, you can navigate throughout contest list.

To **enter a contest**, please press **red X-shaped select** button. To go to **contest description**, press, **blue down arrow**. To change the **user options (settings)**, press **blue up arrow**.

Press red X shaped select button to select a candidate. To hear the **list of candidates**, press **yellow right arrow**. To go to **contest navigation** and move to other contest, **press blue up arrow**. To go to **Review** option, press **blue down arrow**.

When you are on choice list, to select a choice that is first in the list, press red X shaped select button. To go to next choice, **blue down arrow**. To **move up and down though out choice list**, use **up/down blue arrows**. In case of no-candidate, you will hear the candidate name, but will not be able to vote for her/him.

In case of write-in choices, enter the write-in choice, and Write-In session will be presented. In the beginning of the screen, you will hear the instructions about navigation and voting. Write- in session screen has keyboard for entering candidate names, Clear All, Delete buttons as well as options to Cancel and Accept selections. Navigate throughout the screen, by using all buttons on the ATI. To move up use blue up arrow, for down, use **blue down arrow**. For left and right, use **left** and **right yellow button**. To confirm selection, press red **X** shaped select button on the ATI.

> ⊘ **"Review"** option is available at any point during voting. In other words, this option leads you to first review before marking your ballot.


AVS - Voting Screen

At any point, when you are on the candidate list, you can press **right yellow arrows** on the ATI device to move to the **Next** action button. It will lead you to the next contest or to Review. Otherwise, from **Next** button, if you select left yellow arrow, you will be returned to contest description area.

When you are on contest navigation list (form choice list you need to press blue up arrow), use **left** or **right yellow arrows** to navigate the contest list. When you navigate the desired contest and select **X shaped** select button you enter the contest. Otherwise, you are skimming the list of contests without entering each. When you are on the last candidate form the list, press **blue down arrow** to move to Review.

In case of write-in choices, enter the write-in choice, and Write-In session will be presented. In the beginning of the screen, you will hear the instructions about navigation and voting. Write-in session screen has keyboard for entering candidate's names, Clear All, Delete buttons as well as options to Cancel and Accept selections. Navigate throughout the screen, by using all buttons on the ATI. To move up use **blue up arrow**, for down, use **blue down arrow**. For left and right, use **left** and **right yellow** button. To confirm selection, press **red X shaped** select button on the ATI.
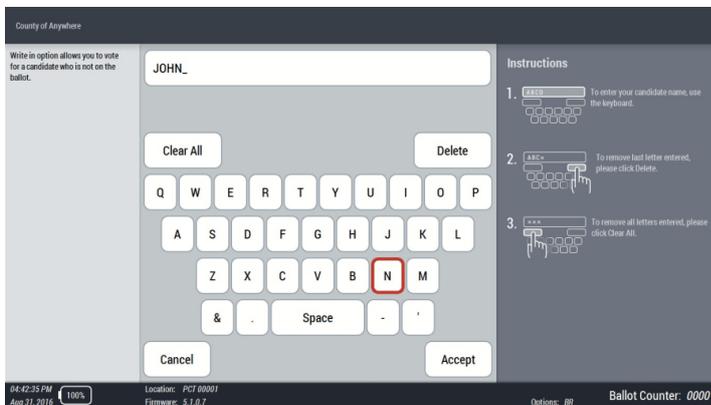

AVS - Write In Screen

As we said, after you make all selections and reach the end of a ballot, you have a final option to **"Review"** selections. (**"Next"** button becomes **"Review"**).
Here, you will be able to hear if there are some warning on the ballot. To change **user option/settings**, press **blue up arrow**. To navigate to **first contest** and review it, press **yellow right arrow**. You will hear your current selection. To **change the selection**, press **red X-shaped select** button.
If you are done with review, press **right yellow** button on the ATI. You will move to **Mark** button. You are moving to ballot marking phase. Press **red X-shaped** select button to accept the selection. To move to **Back** button, press **left yellow** button. After marking, there will be second review. During second review you will not be able to make changes, since your selections are marked and printed on the ballot.
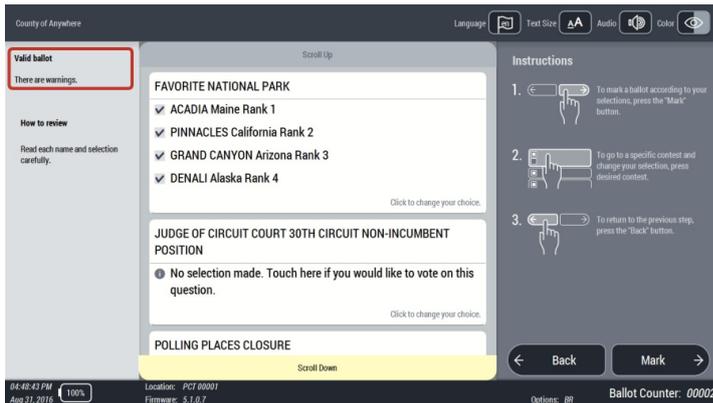
AVS - Ballot Review

Then, marks will be printed on the ballot.
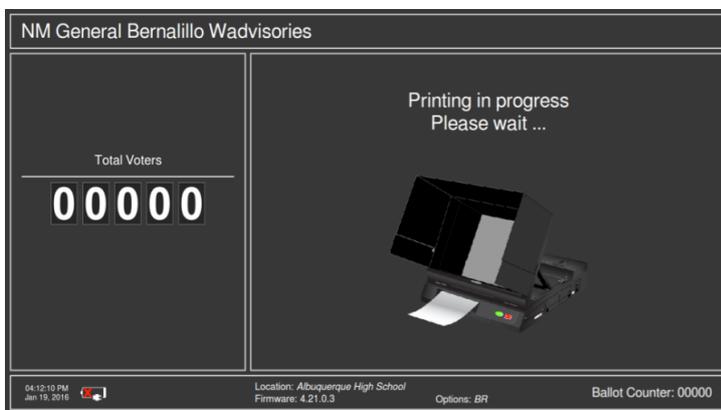
AVS - Ballot Printing in Progress

Then, you will have opportunity to review again. Right now, you are reviewing selections printed on the ballot. If you want to move to contest list, press **left yellow button**. From there, to cast your ballot, navigate to **"Cast"** button. Press **left yellow b utton**. To **cast the ballot**, press **x-shaped select** button. Press **blue up arrow** to return to contest list. When you reach the last contest on the list, press **blue down ar row** to move to **"Cast"** button. Press **X-**shaped to confirm selection (cast a ballot into the ballot box). To return the ballot without casting, press **left yellow button**. Press **X-shaped select button** to confirm selection. The ballot will be return to you. It will have your marks printed. However, the ballot is not cast yet.

In some cases, the voting rules violation will be detected. Depending on an MBS options, you will have the option to confirm or reject casting a ballot. Pop up message can show Cast and/or Reject options. For example, pop up message can say: "You are about to cast a ballot with no marks. Are you sure you want to continue?". Available options are: **Reject** and **Confirm**.

AVS - Ballot Casting.

Ballot Casting Confirmation message will pop up. If you want to continue, to Confirm casting, press **blue down arrow**. To hear cast confirmation warning (in case of voting rule violation), press **blue up arrow**. To go to **rejection** button, press **left yellow button**.
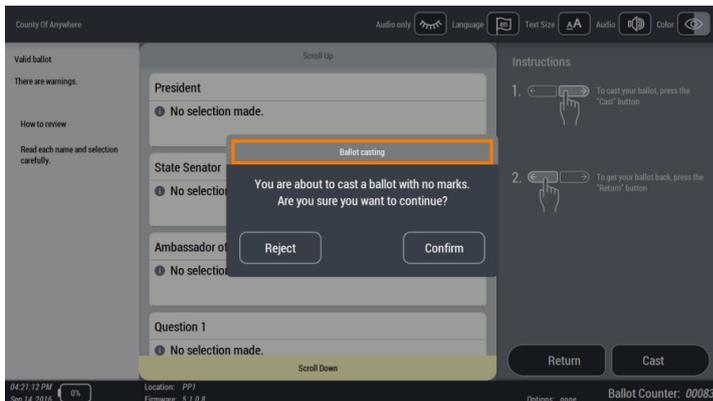
AVS - Ballot Casting Confirmation

Finally, the ballot will be casted. The session is over.
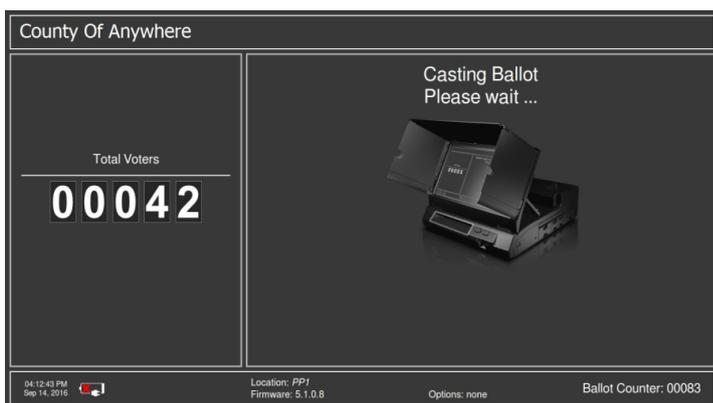
AVS - Ballot Casting

In case of multicard session, the additional screen will occur, informing you that you can insert next card. Press **red X select** button to continue with inserting the next ballot. In case you want to cancel and finish the session, press **right yellow** button.

To confirm your selection, press **red X select** button. After you accepted to proceed with voting, the screen indicating you to insert a ballot will appear. The same instructions will occur as for previous ballot cards.
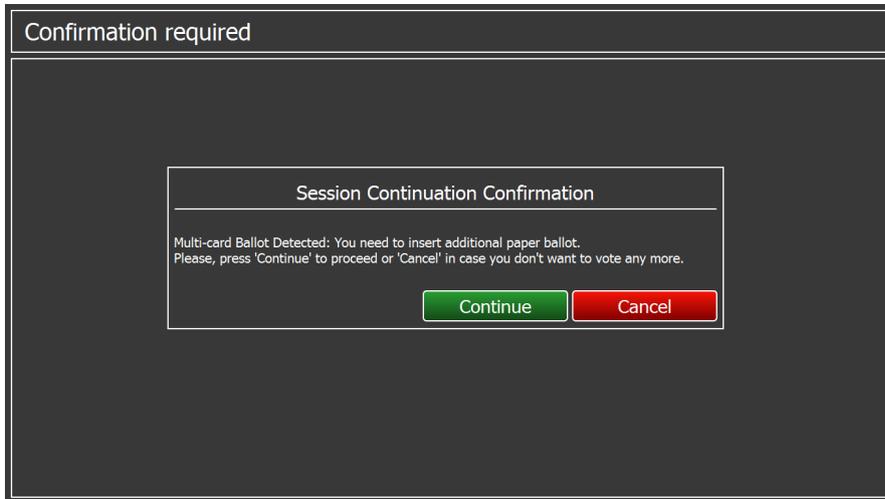

AVS- Session Continuation

10.7.4 Provisional Voting

Provisional voters can mark and review their ballots on ImageCast Evolution . They will be provided with second chance voting if they make any mistakes that will be displayed on the Ballot Review screen of ImageCast Evolution when voting in the Provisional mode. The ballot will be returned to the voter and it will be placed in a marked envelope for processing in the central location after Election Day (see Chapter 12). If a provisional voter wishes to verify how the ICE will interpret their ballot, the ICE operator can activate 'Provisional Vote' mode for the next ballot. 'Provisional Vote' mode is identical to 'Ballot Review' mode except that the 'Cast' button is disabled so that the only option is to return the ballot to the voter when the review is complete:

1. Press the iButton Security Key to the security key receptacle in order to access the Poll Worker Mode menu.

2. Select "Provisional Vote" option from the menu. This will allow the voter to insert a ballot and review their selections on the Ballot Review screen. The 'Cast' button is disabled so that the ImageCast Evolution will always return the ballot to the voter to ensure that no votes are registered. In addition, depending on configuration, the provisional mode can be enabled only on next ballot or continuously.

3. To resume normal 'Election Run' mode, the attendant must press the security key to the security key receptacle to access the Poll Worker Mode menu, and then select either the "Standard Voting" or "Accessible Voting" option.

Provisional Voting Using the Accessible Voting Features of the ImageCast Evolution

If a voter requires both an Accessible Voting Session, and a provisional ballot, the following steps should be undertaken by the poll worker:

1. Guide the voter to the ImageCast Evolution , and log into the Poll Worker menu by pressing the iButton Security Key to the receptacle, and entering in the the appropriate credentials.

2. Press **Utilities** on the left side of the screen.

3. Press **Provisional Voting** under the Utilities menu.

4. Press the **Change** until 'Enabled on Next Ballot' is listed as the Provisional Voting preference.

5. Activate an Accessible Voting Session, as outlined in Section Accessible Voting Session - Contest by Contest Mode.

At this point, the voter can begin making selections to his or her ballot. Once finished, the ballot will be returned to them at the front of the unit. It is advised that the poll worker remain in the vicinity of the voter during their Accessible Voting Session so that the ballot can promptly be placed in a Provisional Voting envelope once it has been returned.

Enabling Provisional Voting

10.7.5 Closing the Polls on ImageCast Evolution

If there are ballots deposited in the auxiliary bin, insert them one-at-a-time into the ImageCast Evolution for tabulating.

Press the **Close Poll** button on the Main Menu of the ImageCast Evolution touchscreen.
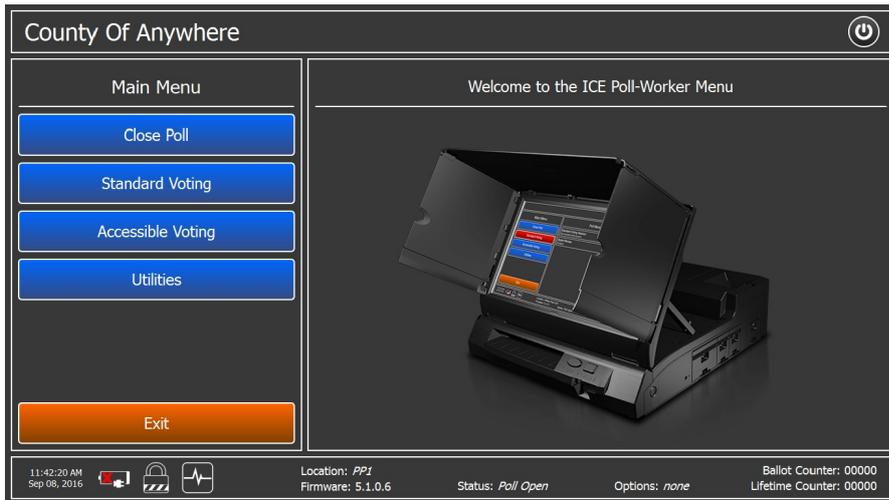
Poll Worker Menu

An Authorization Screen will appear. Enter your username and password and press **OK**.

Close Poll - Authorization Screen

A confirmation screen will appear. Press **OK** to continue.

Close Poll Confirmation Screen

A prompt appears requiring the auxiliary bin to be checked for any additional ballots. Check if the seals on the Auxiliary are intact. If the seals have been broken, then remove the ballots from the Auxiliary bin, place them into a labeled envelope and handle them per jurisdiction's procedures.

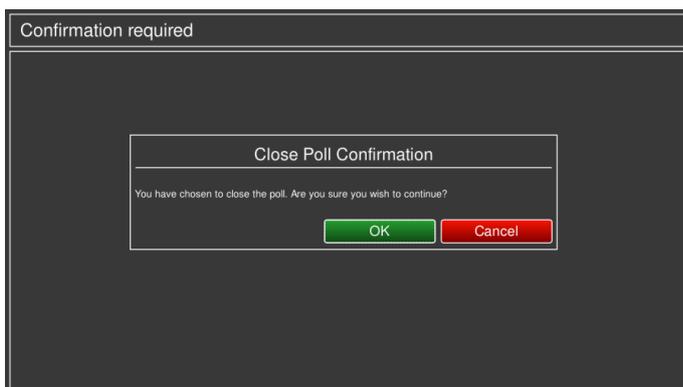Press **OK** to continue.

Auxiliary Bin Prompt

The results tape will begin to print. You will receive confirmation that the tape has printed successfully, and you will be asked whether you wish to print additional copies.

Tear off the results tape and return it, complete with the signatures of Election OfficiAL, to the Election Board. This is the Official Election Results tape.

Print out additional copies by pressing **Yes**. The required quantity of tapes is based on your jurisdiction's requirements.
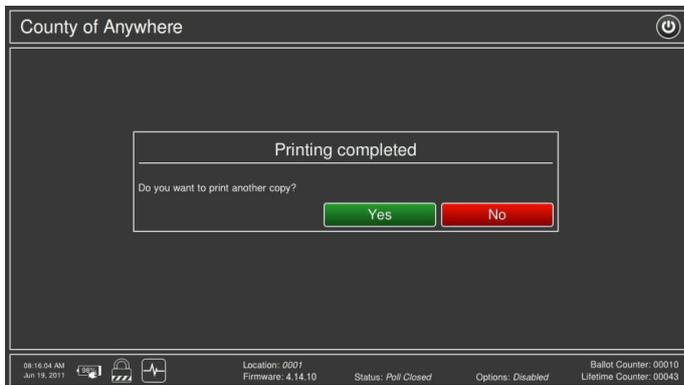
Printing of Result Tape Completed

The ImageCast Evolution 's poll has now been closed.
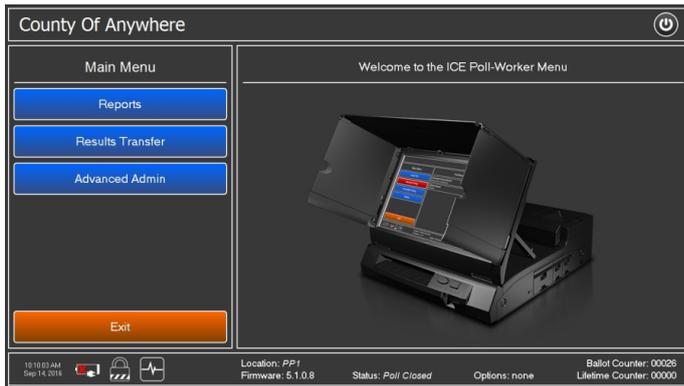
Poll-Worker Menu once Polls have been Closed

Press the power button in the top right corner of the screen. Select the Shut Down option to power down the unit. This action will prompt a countdown until the machine has fully powered down. Close the privacy screen flaps, and place the LCD monitor in the horizontal storage position.

> ⊘ If the monitor is not placed in the horizontal storage position the system will remain in the 'stand by' mode, which expends the battery power.
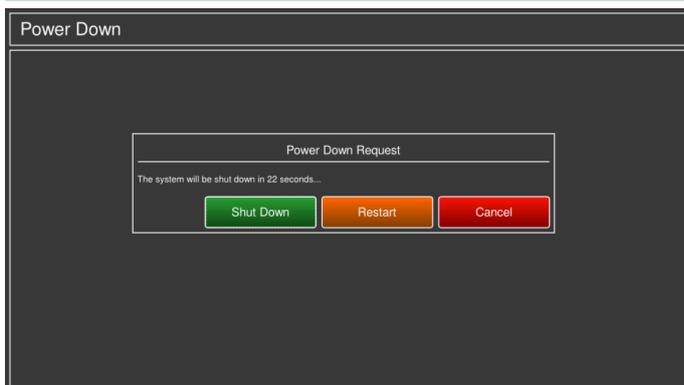
Power Down Request

Break the Yellow seal on the Ballot Box door, and unlock it using the provided key.

Breaking the Ballot Box Seal

Remove all ballots from the Ballot Box bins. Empty the Main bin first, then remove the seal and empty the Secondary bin. Ensure that the ballots from the Main and Secondary bins (containing write-in votes) are kept separate for further, post-election day, processing at the central location.

Place the ballots from the two bins into separate envelopes and label them clearly, noting all necessary detail including, but not limited to, the polling location, tabulator and Ballot Box bin origin.

Close the return container and seal it with a tamper-proof seal.

Removing Ballots from the Ballot Box

Break the Yellow seal on the ImageCast Evolution 's CF1 door, and remove the Compact Flash card. Should you wish to remove the CF2 card, do so at this time. The CF card(s) should be placed in a secure transport envelope/case/bag for transport to the central location.

This card containing the vote totals, together with all envelopes containing ballots removed from the ballot box, are transported to the Central Counting Location for accumulation and reporting of vote total results for all precincts.

Removing the CF1 Card

The step-by-step procedure for the Election night processing continues in the Chapter Semi-Official Canvass Tabulation and Reporting.

10.7.6 Operating the ImageCast on Battery

The system will shut down and preserve the integrity of votes cast prior to the power failure, and resumes functionality when power is provided or restored without significant or intrusive power-up procedures. In the event of a power failure, the equipment will continue to operate and indicate the battery life on the LCD monitor and side panel LED lights.

A battery power source is provided in the event that the main electric supply is disrupted. The battery power source operates the system and allows for the casting of votes for a period of two hours under normal operating conditions (100 voters per hour, and two AVS voters per hour).

The switch from battery power to AC power (or vice versa) takes place automatically. If the AC power is disconnected or unavailable, the unit will continue to operate on battery power as long as a sufficient charge remains in the battery. When AC power is reconnected or otherwise resumes, the ImageCast Evolution automatically returns to AC power mode.

10.7.7 Changing the Printer Paper Tape

Thermal Paper Removal

Lift the thermal printer door upward to access the printer module. On the left side of the thermal printer module, press the green release lever into an angled position. This releases the thermal head from the platen roller to allow the paper to be removed or fed in smoothly.
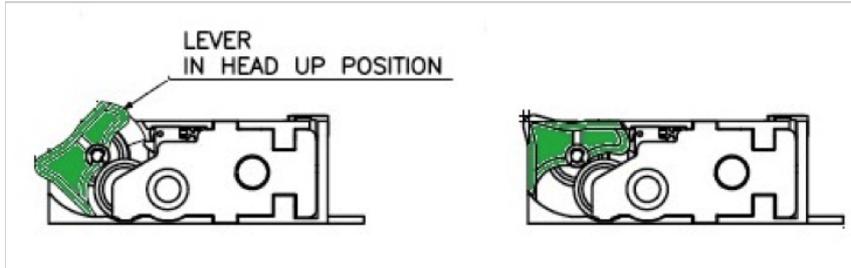
Lever in Head Up/Down Position

Remove the old partial paper roll (if any) out from the printer compartment. Slide the roll shaft out of the paper roll.

Thermal Paper Installation

Thermal Paper installation can be performed even while the system is powered on although it is recommended that the user read the tabulator handling notes prior to performing any maintenance routine on the machine.

- Remove the end-holding tape from a new paper roll to free the roll end. Unwind the paper roll past any glue residue from the tape.

- Cut the edge of a new paper roll relatively straight.

- Feed the roll shaft through the new paper roll.

- Place the new roll into position on the paper roll tray such that the paper unreels from underneath the roll and upwards.

> ⊘ Thermal Paper is chemically coated usually only on a single side of the roll. Heat from the thermal printer will therefore print only on that side of the paper. A fingernail swiped quickly across either side of the paper can generate enough heat from friction to produce a mark and thus identify the coated side of the paper roll. This is the side that needs to be placed against the thermal printer head.

- Feed the straight-cut edge of paper underneath the platen roller. As the paper is fed through, it will find its way between the platen roller and thermal head.
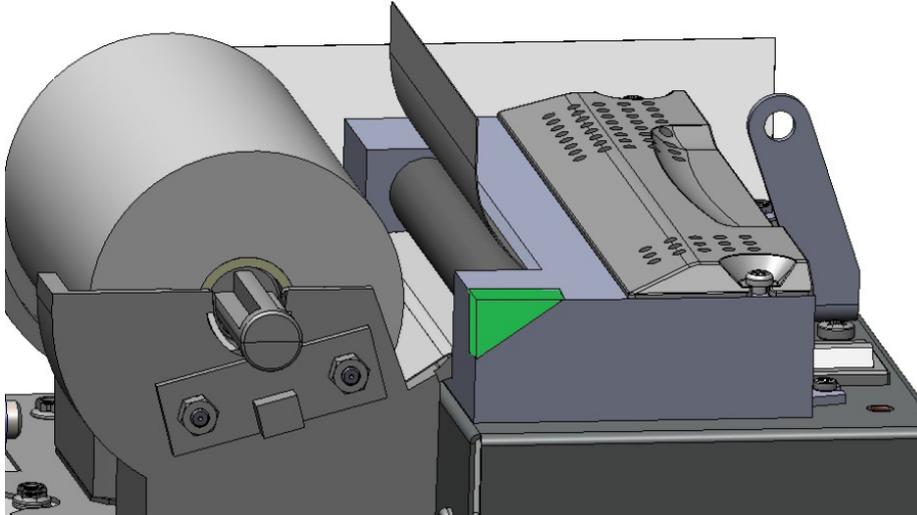
Paper Roll Installed

- Pull the paper up then press the green release lever into the horizontal head down position to secure the paper in place.

- Pull the paper one more time and ensure alignment to the platen roller

- Close the printer door making sure the thermal paper feeds through it.

11 Semi-Official Canvass Tabulation and Reporting

This chapter contains suggested procedures that will be a part of a jurisdiction's Election Night standard operating procedures.

11.1 Central Tabulation

Report preliminary Absentee and All Mail ballot results that were scanned on the Absentee/All Mail ICC, up until the jurisdiction's reporting 'cutoff ' point.

1. Open the EMS Results Tally & Reporting application (referred to here as RTR). If the project was created by the Dominion Voting's Service Bureau, the RTR user name and password will be provided to the jurisdiction. Jurisdictions programming their own elections will have to have their Administrator create an RTR user in the EMS EED application.

2. Open the appropriate Election Project and enter your login credentials.

3. Run the Zero Report from the RTR.

> ⚠ If automatic loading of results is used and Adjudication is a part of the workflow, then the RTR will already contain adjudicated results. The results will automatically be loaded into RTR and updated after Adjudication.

4. If automatic loading of results is not used, then load the results files, audit log files and result images (if enabled and required) from the ICC tabulators that are not automatically loaded into the RTR application.

> ⚠ When loading results from any ICC tabulator on election night, ensure that the **Skip Adjudication** checkbox is selected. *NOTE: On Election Day, only the Results files should be loaded into the RTR, since images can prolong the loading process.*
> Once all result files are uploaded, return here and continue with the next step.

5. Validate and publish results files in the RTR application.

6. After the Closing of Polls, and after the Early Vote and Election Day ImageCast Evolution result have been loaded to the RTR application, run the Election Summary Report.

11.2 Early Vote ImageCast Evolution

Report preliminary Early Vote ballot tally results that were scanned up until the jurisdiction-defined 'Cut Off ' point in time as previously mentioned in the ImageCast Evolution:

1. Unpack the CF cards from the Early Vote tabulators and identify the CF1 card for that tabulator to be uploaded.

2. Open the EMS Results Tally & Reporting application (referred to here as RTR). If the project was created by the Dominion Voting's Service Bureau, the RTR user name and password will be provided to the jurisdiction. Jurisdictions programming their own elections will have to have their Administrator create an RTR user account and activate it in EED.

3. Open the appropriate Election Project and enter your login credentials.

4. Load the results files, audit log files and result images (if enabled and required) from all Early v oting ImageCast Evolution tabulators into the RTR application.

> ⊕ When loading results from any Early Vote tabulator, ensure that the **Skip Adjudication** checkbox is selected. Once all result files are uploaded, return here and continue with the next step.
>
> *On Election Day, only the Results files should be loaded into the RTR, since images can prolong the loading process.*

5. Validate and publish results files in the RTR application.

6. After the Closing of Polls, and after the Election Day ImageCast Evolution and ICC results have been loaded to the RTR, run the Election Summary Report.

11.3 Precinct Tabulation (ImageCast Evolution)

After closing of polls on Election Day, the results from precinct ImageCast Evolution tabulators are loaded into RTR as they start arriving to the central processing location.

1. Unpack the CF cards from the Election Day precinct ImageCast Evolution tabulators and locate the CF1 cards for the tabulator to be uploaded.

2. Open the EMS Results Tally & Reporting application (referred to here as RTR). If the project was created by the Dominion Voting's Service Bureau, the RTR user name and password will be provided to the jurisdiction. Jurisdictions programming their own elections will have to have their Administrator create an RTR user account and activate it in EED as described in Creation of RTR User in Election Event Designer.

3. Open the appropriate Election Project and enter your login credentials. Load the results files, audit log files and result images (if enabled and required) from Election Day ImageCast Evolution tabulators into the RTR application.

> ⊘ When loading results from any Election Day tabulator, ensure that the **Skip Adjudi cation** checkbox is selected. Once all result files are uploaded, return here and continue with the next step.
> *On Election Day, only the Results files should be loaded into the RTR, since images can prolong the loading process.*

4. Keep on loading the results as the CF cards arrive until pre-determined points in time are reached, at which result files loaded until that point are published and reported on (see EMS Results Tally & Reporting Use Procedures).

5. Validate and Publish those results.

6. To find out how many precincts have been reported on, as opposed to how many are still due to be loaded into the RTR, run the 'Tabulator Status' report:

   a. Under the 'Reports' menu group click 'Default'.

   b. In the 'Report Name' drop-down, select the 'Tabulator Status' and click on the **Create Report** button.

   c. The success dialog window will appear when the report is complete.

   d. Click **OK** and then click **Search** to list reports.

   e. Double-click on the newly created report to open it to inspect the 'Load Status' and 'Total Ballots Cast' columns to determine which precincts are missing from the report.

7. Continue the process of loading, publishing and reporting of the results from the Election Day ImageCast Evolution tabulators in the regular intervals until all are loaded.

8. After all results from Election Day ImageCast Evolution , Election Day ImageCast Evolution and ICC tabulators have been uploaded, run the Election Summary Report again to obtain the Final Election Night Summary Report.

11.4 Precinct Tabulation (ImageCast X)

ImageCast X produced ballots need to be run through ImageCast Evolution or ImageCast Central tabulator in order to be counted. Once the ballot is scanned, the results are tabulated and indistinguishable from pre-printed, hand-marked ballot results.

See Precinct Tabulation (ImageCast Evolution) or Central Tabulation for more information on tabulation.

11.5 EMS Results Tally & Reporting Use Procedures

The following procedures assume the following:

1. That the RTR User has been created and activated in the EMS EED application. If you have received the project from the Dominion's service bureau, this would have already been set up in the Election Project and the RTR user name and password details would have been provided to the jurisdiction together with the Election Project package. If the jurisdiction is programming their own election project, the EMS Administrator will set up the RTR user.

2. Network parameters have been configured. This should have been set up during the Installation, Readiness and L & A procedures.

3. Reporting services are initialized as would be done during the installation procedure.

4. Any pre-existing results (such as results generated during the L & A procedures) have been purged by the Administrator.

11.5.1 Start EMS RTR

Double-click on the Results Tally & Reporting icon on the desktop. If this is the first time opening Results Tally & Reporting, the Localization Settings dialog will appear. Select Default as the language option, and click OK. The EMS Results Tally & Reporting application opens.

11.5.2 Open Project

To open your Election Project in Results Tally & Reporting click Election Project and choose Open Project. Select the desired election project and click OK. Enter your username and password and then click OK.

11.5.3 Enable Automatic Loading of Results to RTR

Expand the Settings menu and click on the Project Properties menu item. The Project Settings dialog appears. The following parameters can be configured:

- Check the Enable Adjudication option. Checking this item will ensure that the Adjudication process is included in the work flow when managing result files.

- Automatically publish adjudicated results: Checking this item will ensure that any results that undergo the adjudication process will be automatically published.

- Click on Apply to save the settings.

> ⓘ Results that are skipped by Adjudication will have to be published manually by the application user.

11.5.4 Run Zero Report

In order to verify that there are no published results in the database:

1. Expand the Reports menu and click Election Summary Report.

2. Apply the following settings:

- In the Contest Statistics group box, check all items except Double Votes.

- Uncheck Cross endorsed totals only.

- On the Percents option, select Votes Cast.

- On the Write-ins option, select Split.

- Sort Candidates per Global order.

- In the Contest Filter section, choose Select All.

- Select the Districts radio button, and choose Select All.

- In the Polling location section, choose Select All.

- In the Tabulator section, choose Select All.

- Check all counting groups.

3. Click Create Report. Wait until the report is created and verify that there are no results in the database.

If reporting engine returns error:

1. Initialize reporting services.

2. Once reporting services are successfully configured, click Create Report and verify that there are no results in the database.

3. Click Export and choose your preferred file type.

4. Save the file.

> ⚠ If the Zero report is showing any results, notify the Administrator immediately.

11.5.5 Load Content from the Tabulator's Memory Card

1. Connect the card reader/writer to the EMS Results Tally & Reporting workstation.

2. Insert the CF card from Early Vote or Election Day ImageCast Evolution tabulator into the card reader.

3. Click **Actions** and choose **Open Card Management**.

4. The **Drive Selection** dialog appears. Select the correct drive and click **OK**. The **Load Results** dialog opens.

5. Select one of the following options from the **Actions** combo box: **Load Results File**, **Load Ballot Images** or **Load Log File**.

> ⊘ **On Election Night, due to time constraints, Dominion suggests that only Result Files are loaded.**
>
> **If the results to be loaded are NOT to be adjudicated, select the checkbox "Skip Adjudication". If the results to be loaded are allowed to proceed into adjudication, then leave the checkbox unchecked.**

6. Click **Load**. The **Progress** window appears. Click **OK** once the process is completed.

7. Repeat steps 4 & 5, until all desired content has been loaded.

8. Close the **Load Results** dialog.

9. Repeat steps 2 through to 8 for all CF cards to be loaded.

11.5.6 Load Results from Directory

1. Click **Actions** and choose **Load Results From Directory**.

2. The **Load** dialog appears. Click **Browse** to browse to the source directory.

3. Expand **Computer** and browse to the local folder where the results are saved (for example **Z: \ Pro ject Name \ Results \ Tabulator x x x x \ Results** folder).

4. Click **OK**.

5. Leave file types as **Results**. **NOTE: If the results to be loaded are NOT to be adjudicated, select the checkbox "Skip Adjudication". If the results to be loaded are allowed to proceed into adjudication, then leave the checkbox unchecked.**

6. Select the files you wish to load and click **Load**.

> ⊘ **When you select the tabulator folder to load results from, make sure that the "Show Loaded Files" checkbox is selected. The result files that were already loaded will be listed in the window with a "Load" column checked. Select only the result files that have not been loaded and click "OK". If you try to upload result files that have already been loaded, the message will be displayed notifying you that results already exist in the database.**

7. Once all result files have been loaded, click **OK**.

8. Repeat steps 2 through 7 to import results for each tabulator, taking care to select the **Results** folder within the desired tabulator folder in step 3 above.

9. Click **Close** to close the dialog.

11.5.7 Validate and Publish Results

Results must be in a **Published** state in order to report them. Publish a selection of result files (that are in Initial state):

1. Select **Result Files** in the left hand menu bar. The Result Files main activity screen appears.

2. **Tabulator**, **Tabulator Type**, and **Result State** drop down menus may be used to filter the search results.

3. Click **Search** to list results.

4. Select all results that you wish to include in the reports and click **Validate & Publish**.

5. Click **Yes** to confirm your action in the Question dialog that appears.

6. Click **Close** in the Information dialog that appears once the process is complete.

11.5.8 Election Night Summary Report

To create Election Summary Report, do the following:

1. Expand 'Reports' and click on the **Election Summary Report** option in the **Activities Navigation Panel**. The 'Election Summary Report' context sensitive screen appears.

2. Select the desired criteria in 'Parameters' and 'Filters' sections of the 'Election Summary Report' context sensitive screen and click on the **Create Report** to generate the report. This may take a while, depending on the size of election.

3. The report will be displayed on the right side of the screen.

4. To export and save the report, click on the **Save icon** in the shape of the floppy disc (located on the top right tool bar above the report). Select the format in which you wish to save the report.

5. The Windows browse dialog window will appear. Navigate to the location where you want to save the report, enter the name and click on the **Save** button.

12 Adjudication

12.1 Adjudication Process

Adjudication eliminates the need to physically rescan ballots, which can potentially damage the originals and cause the chain-of-custody concerns. While ballot adjudication is in progress, all clients receive ballots to adjudicate based on the filtering conditions set up by the administrator in the Project Setup Wizard. Ballots are automatically served to each client when available. Both Adjudication Administrators and general Adjudication Users may adjudicate ballots.

12.1.1 Adjudication Overview

To adjudicate a ballot, a user clicks and drags on the ballot viewing area with the mouse. The mouse wheel can be used to zoom in and out of the ballot image. Additionally, some actions are available via keyboard shortcuts.
The following is a listing of available shortcut keys:

Shortcut Keys

Shortcut Key	Action
Ctrl + / Ctrl −	Allows the user to zoom in and out of the ballot
F	Shows the front side of the ballot image
B	Shows the back side of the image
A	Shows the audit mark
Left arrow	Previous highlighted contest
Right arrow	Next highlighted contest
R	Refocus current contest
Enter	Finish current ballot
O	Toggle overlays (show/hide on navigation bar)

12.1.2 Ballot Navigation as an Administrator

When opening the application after adjudication is started, Administrators are presented with the ballot adjudication screen that all users are presented with, however, receiving of ballots is paused by default, so administrators will not see a ballot automatically like general users will.

The Ballot Navigation menu on the right side of the user interface provides a toggle switch to start or stop receiving ballots, and another switch to turn target overlays and highlights on/off. In addition, there is a description of the ballot being adjudicated, thumbnails that switch between ballot faces when clicked, and buttons to complete adjudication and view the AuditMark.
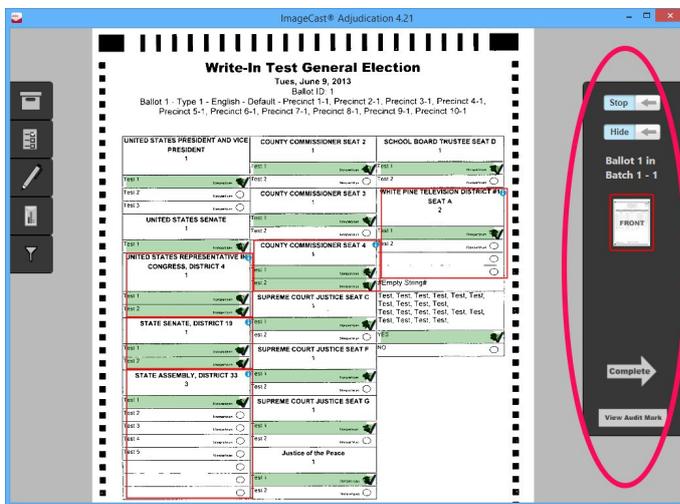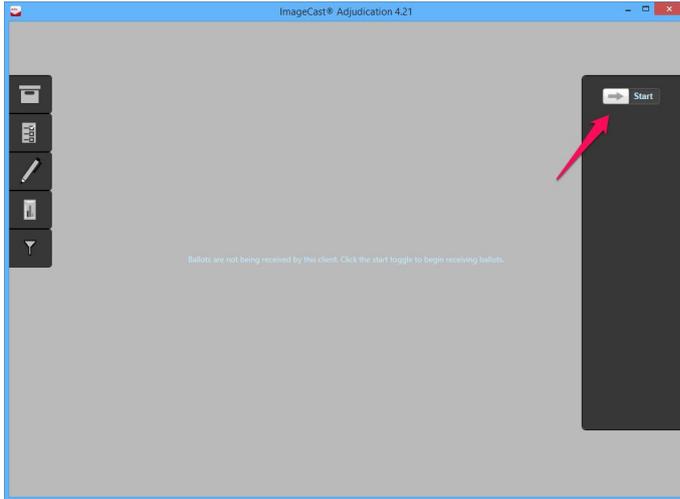

Ballot Navigation

Starting or Stopping Receipt of Ballots

The first toggle switch on the Ballot Navigation menu allows Administrators to decide whether they receive ballots for adjudication or not. If the Administrator decides to stop receiving ballots after a ballot is received, the ballot is taken away and distributed to another adjudication user. If the administrator reopens an adjudicated ballot (see section Re-opening Ballots), no other ballot will be served, even with this toggle switch on, until after the administrator finishes reviewing the reopened ballot.

To stop or start receiving ballots:

1. On the *Ballot Navigation menu*, click **Stop** to stop receiving ballots for adjudication.

2. To begin receiving ballots for adjudication click **Start**.

Start/Stop receiving ballots toggle button

Turning the Ballot Overlay On/Off

The second toggle switch on the Ballot Navigation menu controls the overlays shown over the ballot image, such as contest coloring and checkmarks over the target areas. If you are unsure of a mark made by a voter and want to see the ballot without these overlays, turn this toggle switch off (so it reads Show). When this is off, clicking on the image to adjudicate is unavailable. To be able to adjudicate again, the target overlay switch must be turned on (that is, so it reads Hide).
To turn the ballot overlay on / off:

1. On the *Ballot Navigation menu*, click **Hide** to remove checkmarks and overlays.

2. To view the checkmarks and overlays again, click **Show**.
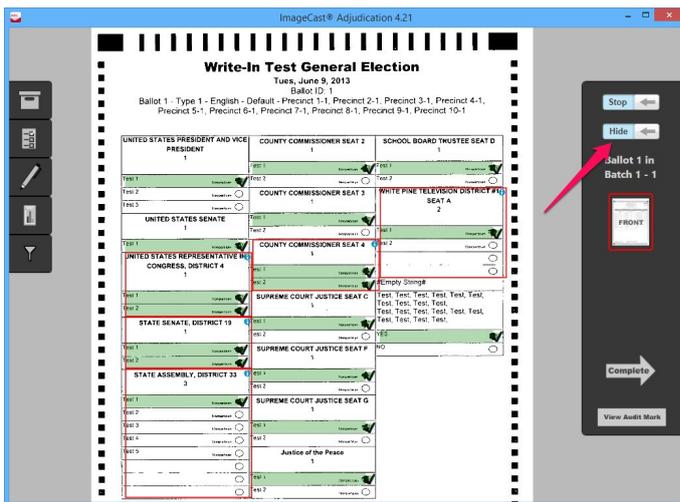
Show/Hide Overlay

Ballot Information Section

Ballot information is shown below the toggle switches. This includes the ballot number as it is in the sequence of the batch, and the tabulator and batch number to which it belongs.

To view how many ballots there are left to adjudicate in the batch, and the total ballots left to adjudicate in the system, simply hover over the ballot information.
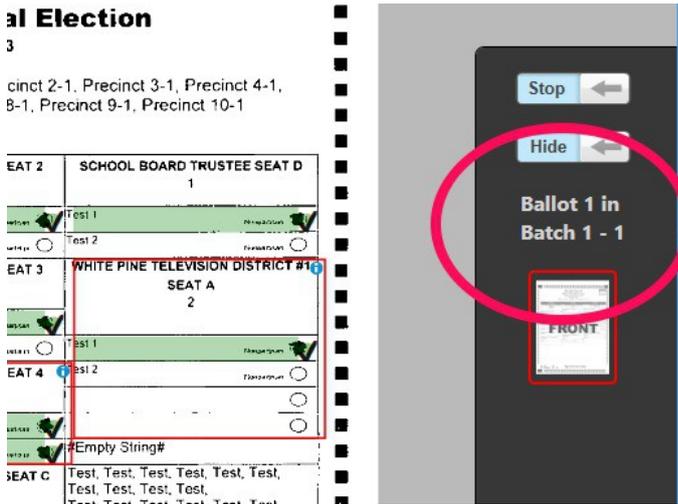
Ballot Information

Ballot Face Navigation

The application automatically takes a user to the first available contest that requires ballot adjudication. A red outline will surround the **FRONT** or **BACK** icon in the *Ballot Navigation menu* to notify the user which side of the ballot the application is focused on.
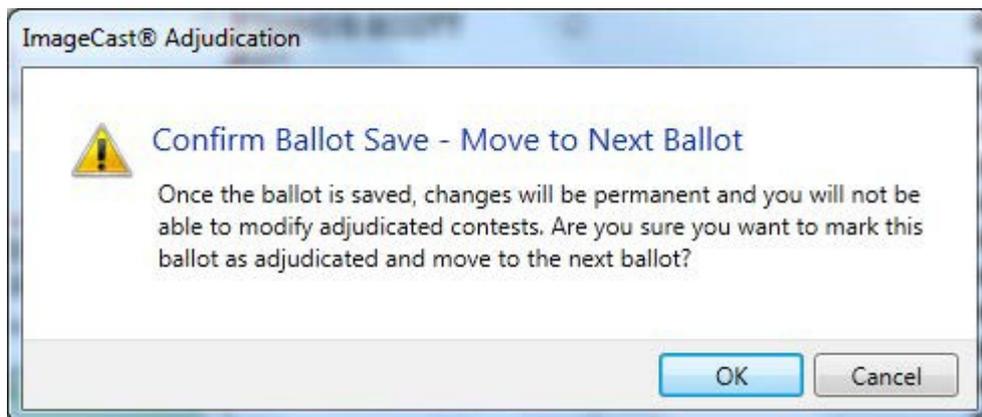
Confirm Ballot Save

The Complete button allows adjudicators to save their adjudications and move to the next ballot. Once the ballot has been adjudicated, the ImageCast AuditMark that is part of the ballot image will be appended with the list of adjudication actions taken.

While Administrators can make changes to adjudicated ballots by reopening them, the ImageCast AuditMark cannot be changed and will always reflect all previous and current adjudication actions taken on a ballot.

The View Audit Mark button allows the adjudicator to review the ImageCast AuditMark. Note that initially, the AuditMark will only show the tabulator's original interpretation of the ballot. Additionally, the AuditMark is not appended until after the ballot is completed. To view the appended AuditMark, an Administrator can reopen the ballot, see section Re-opening Ballots.

Audit Mark

Viewing the Audit Mark with Split View

The ballot viewing area can be split into two panes in order to show the ImageCast AuditMark along with the ballot face, which enables the adjudicator to inspect both at the same time. A splitter bar at the bottom of the ballot viewing area can be used to adjust this split view.
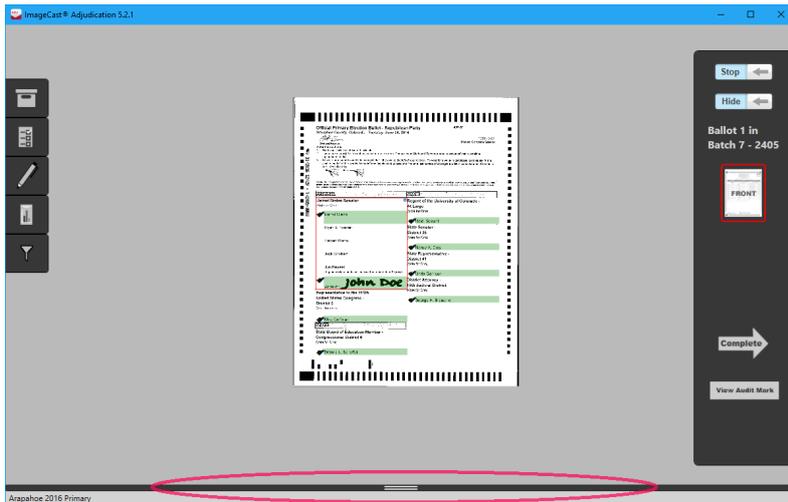
Split View Splitter

To show or adjust the size of the split view, simply click and drag the splitter bar with the mouse. To toggle between showing the split pane at the bottom or to the side of the main pane, double-click the splitter. The AuditMark image in the split pane can be moved around and zoomed to in the same way that the ballot image in the main pane can be.

12.1.3 Ballot Navigation as a General User

When opening the application, general users are presented with the ballot adjudication screen. If adjudication is started and a ballot is available for adjudication, the application will automatically load it and present it to the user. The Ballot Navigation menu on the right side of the user interface provides a toggle switch to turn target overlays and highlights on/off. In addition, there is a description of the ballot being adjudicated, thumbnails that switch between ballot faces when clicked, and buttons to complete adjudication and view the AuditMark.
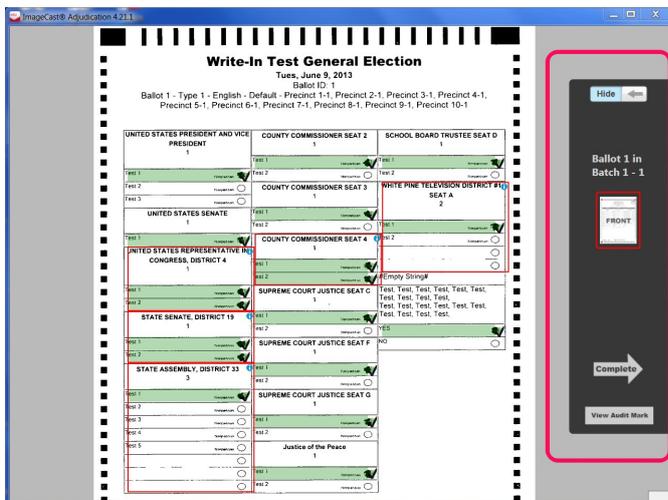
Ballot Navigation

Turning the Ballot Overlay On or Off

See Turning the Ballot Overlay On/Off.

Ballot Information as a General User

See Ballot Information as a General User.

Ballot Face Navigation as a General User

See Ballot Face Navigation.

Viewing the Audit Mark with Split View as a General User

See Viewing the Audit Mark with Split View.

12.1.4 Contest Information

Ballot images are presented to users with overlays representing whether or not the vote was originally counted by the tabulator and the confidence percentage of each mark. The system will highlight each choice that contains a detected mark in its area:

- Green: Counted marks, that show marks counted by the system.

- Yellow: Marginal marks, that are not counted by the system.

For counted marks, the system overlays a green target indicator with a check mark icon in the target area. Overlays for both choices and contests may be toggled on and off by the user to allow unobstructed viewing of the target area, see section Turning the Ballot Overlay On/Off.
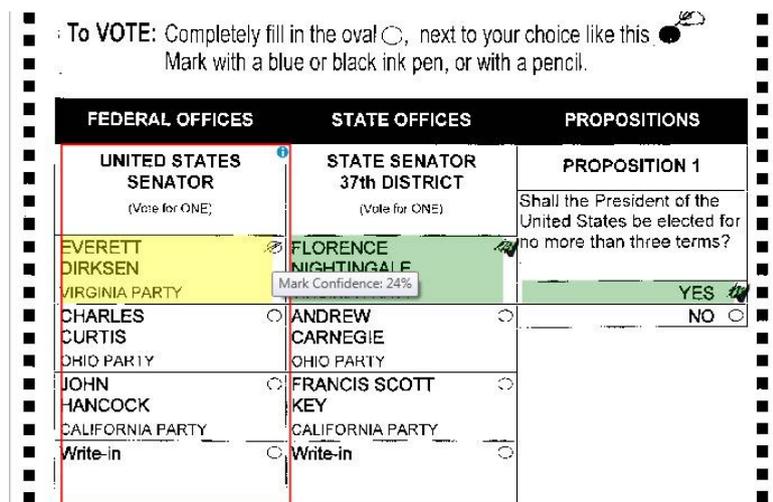
Marginal mark confidence

Additionally, an informational icon is overlaid on the top right corner of each contest. When hovered over, this provides information about detected outstack conditions for the contest, if any. Finally, choi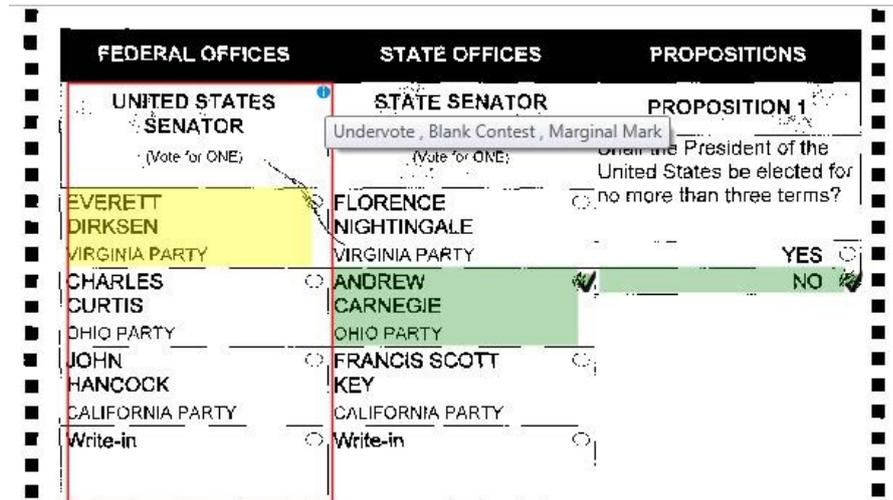ces which are detected as marginal marks (mark confidence between the lower and upper thresholds defined for the tabulator) will display a confidence percentage when the mouse is hovered over the choice's target.

Overlays with contest information

12.1.5 Adjudicate a Contest

To adjudicate a contest, a user clicks on the target area of the ballot to toggle its vote status. If the choice was previously counted as a vote, clicking on it will remove the vote and a red overlay with an X icon will appear over the target. If the choice was not previously counted (including if it was detected as a marginal mark), clicking the target will add a vote for that choice and a green overlay with a check mark icon will appear. If the choice is disabled, clicking on the target will display an error message.
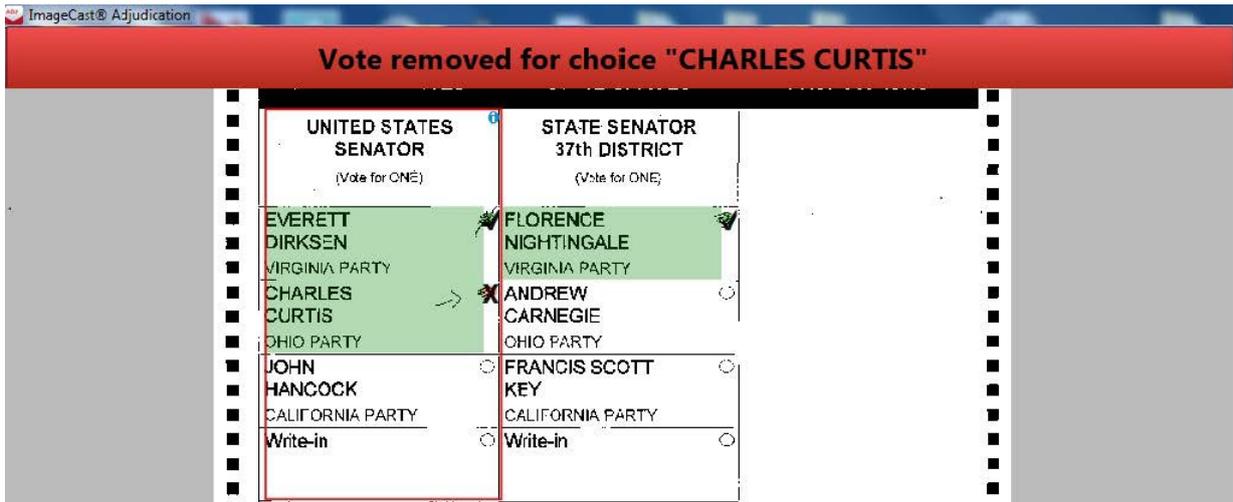
Vote removed
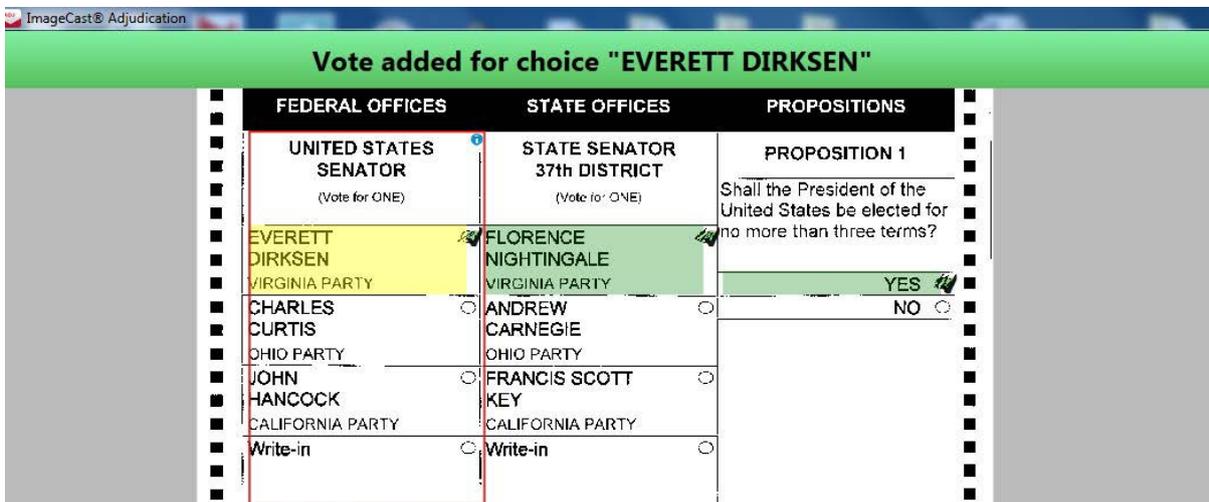
Vote Added

Adjudicate Write-ins

For write-in contests, a pop-up dialog is shown that allows the user to resolve the write-in to a qualified write-in name, reject the write-in vote as invalid with a listed rejection reason, or accept a write-in as-is. If the write-in is resolved to a qualified write-in name, the overlay will appear green with a check mark icon.

Note that the qualified write-ins that appear in this pop-up are obtained from the election definition information in EMS, which means that they must be defined in Election Event Designer (EED). See the EED user manual for information on how to add qualified write-ins for a contest.

Qualified write-in names may only be used once per contest. For example, in a vote for two contest, a single qualified write-in name may only be applied to one of each write-in choice. Once a candidate name is selected and assigned to a choice, it is no longer available for subsequent name resolution within that ballot.

Resolving a Write-in to a Qualified Write-in Name

1. Select the write-in target to open the pop-up.

2. Select the write-in from the list of qualified write-ins.

3. Click Accept. A user notification appears and displays for whom a write-in was accepted.

Write-in Accepted For: Abraham Lincoln

Write-in notification

Accepting a Write-in As-is

1. Select the write-in target to open the pop-up.

2. Select **Accept As-Is**. A user notification message appears stating that a write-in was accepted as-is.

In the case where a write-in was added by a voter who wrote a name in the write area, but did not fill in the write-in target, the adjudicator can still accept that mark as-is, which casts a vote for the general write-in option, or accept it to a qualified write-in if one exists. The other option is to leave the write-in as an undervote. To remove a write-in accepted as-is, click **Remove Mark**.

Note that Accept As-Is function does not apply to QR ballots.

Removing a Write-in Mark

⚠ An adjudicator must first have accepted the write-in as-is in order for the Remove Mark button to be active.

1. Select the write-in target and the pop-up dialog appears.

2. Click Remove Mark.
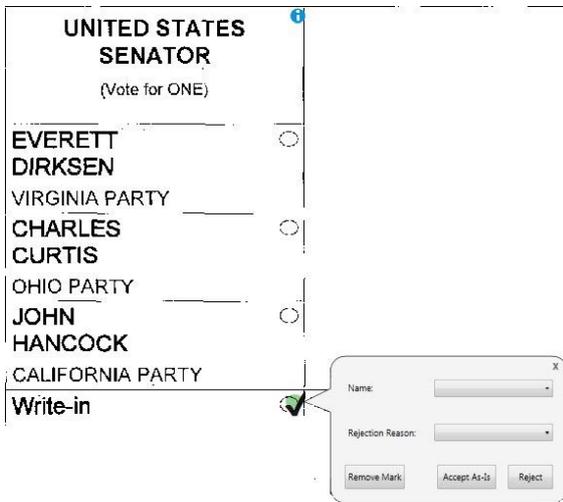
Remove a mark

Rejecting a Write-in

1. Select the write-in target to open the pop-up.

2. In the Rejection Reason drop- down menu, click the applicable reason.

3. Click Reject. A user notification message appears stating the write-in was rejected.

> ⚠ If a write-in is rejected that contest is counted as an undervote. Accept the write-in as-is if you do not wish to count the contest as an undervote.
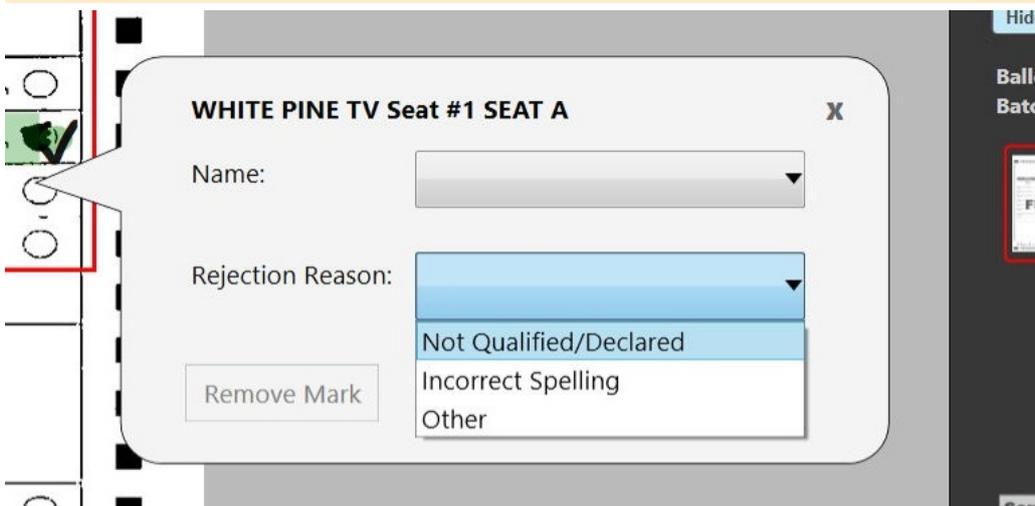
Write-in Rejection List

Exiting the Write-in Pop-up Dialog

1. Select the write-in target and the pop-up dialog will appear.

2. Select the X in the upper right corner.

Filtered Contests

If only one or some contests were chosen in the Contest Filtering step of the Project Setup Wizard, as opposed to all contests, only ballots that contain the chosen contest or contests will be shown to adjudicators. Additionally, when a ballot is shown, adjudicators will only be able to make changes to the selected contest or contests, as all other contests will appear grayed-out.

Contest and candidate highlighting, including the contest information icon will only appear for contests that may be adjudicated. Other contests will not have this highlighting regardless of whether they have outstack conditions or not.
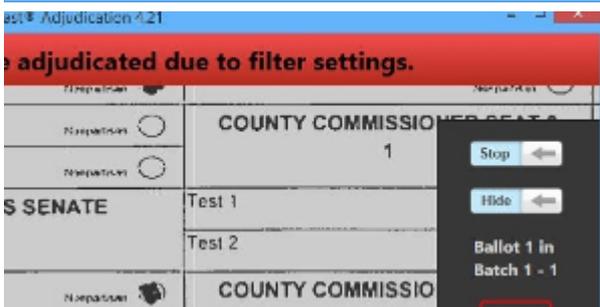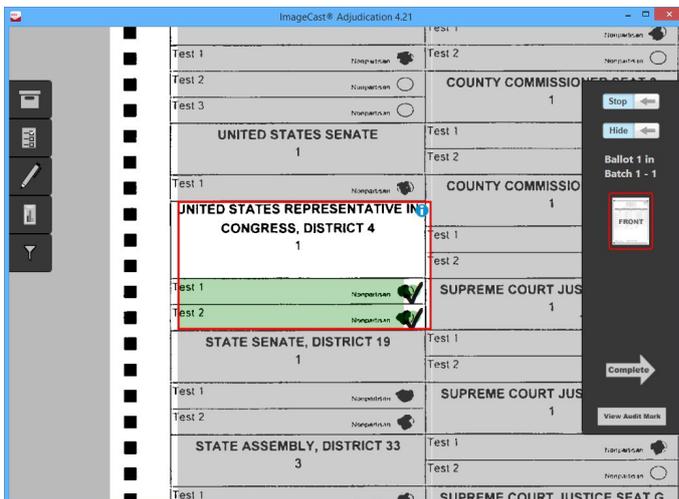
If an adjudicator tries to make a change on a contest that cannot be adjudicated, they are notified that the action is not allowed due to the contest filtering constraint and no adjudication occurs.

12.2 Adjudication Process - Digital Ballots

Adjudication includes the ability to process digital ballots such as those produced by the Ballot Marking Device (BMD). Ballots printed by the BMD contain cast vote data as a barcode that is machine-readable by the ImageCast Central scanner, as well as plain text that is readable by a voter or election official.

For cast vote records originating from DRE (Direct-Recording Electronic) machines, the adjudicator is presented with an image similar to that produced by the BMD, containing human-readable text but without a barcode. In any case, the plain text in the image allows for write-in choices to be resolved by the adjudicator.

Digital ballots are contrasted to standard ballots, which are scans of the physical paper ballot on which voters mark their choices. With digital ballots, the only outstack conditions that need adjudication are write-ins, as the originating device does not allow other outstack conditions to occur. Apart from the special user interface that is shown for digital ballots, all other adjudication functionality is identical to that described in section Adjudication Process.

12.2.1 ImageCast Digital Ballot Adjudication Overview

As with a standard ballot, to adjudicate a digital ballot the user is presented with a ballot image, which may be the actual scan of a barcode ballot or an image derived from the vote record cast on a DRE. The user can move and zoom the image as with a standard ballot image. Keyboard shortcuts may be used as well, though some may not be applicable to a digital ballot. See section Adjudication Overview for more information on shortcut keys.

The main difference in the ballot viewing area for digital ballots, when compared to standard ballots, is the presence of the Write-in Resolution Panel on the left side of the screen. The panel displays the names of contests on the ballot that have a write-in choice. Beneath each contest name there is a Resolve write-in button that allows adjudicating each contest.

Unlike standard ballots, digital ballots have no contest boxes or voting targets that can be clicked on or highlighted. For this reason, no colored overlays are shown on top of the image for these ballots, and there are no areas that can be clicked on to adjudicate; the Write-in Resolution Panel is the only way to adjudicate digital ballots.

Turning the Ballot Overlay On and Off - Digital Ballots

In the case of a digital ballots, the ballot overlay switch on the Ballot Navigation menu is used to show or hide the Write-in Resolution Panel. If a user finds that the panel is obstructing their view of the ballot, toggling this hides the panel and frees up space on the screen. To do this:

1. On the *Ballot Navigation menu*, click **Hide** to remove the *Write-in Resolution Panel*.

2. To view the *Write-in Resolution Panel* again, click **Show**.
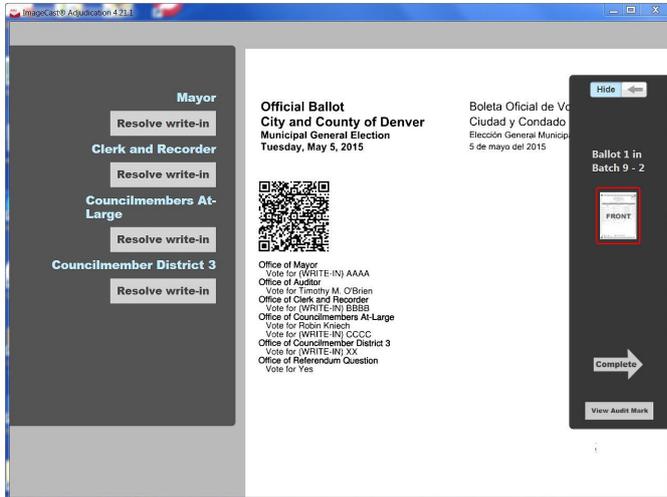
Digital Ballot Adjudication

12.2.2 Resolving a Write-in

To resolve a write-in, a user clicks the Resolve write-in button in the Write-in Resolution Panel for the applicable contest. This brings up the same write-in resolution pop-up that is used for standard ballots. See section Adjudicate Write-ins for full information on how this pop-up is used. In cases where more than one write-in choice is available for a contest, multiple buttons appear under the contest name and these correspond with the order of the write-ins printed on the ballot image.
In the standard ballot interface, the adjudicator can resolve write-ins to candidates already printed on the ballot by simply clicking on the target for the desired candidate. For digital ballots however, there are no targets to click, so resolving to already existing candidates is not possible this way. For this reason, the pop-up dialog to resolve write-ins presents the user with all of the candidates listed on the ballot as well as the qualified write-in candidates. Qualified write-in candidates and ballot candidates are separated in the drop-down by a horizontal bar (qualified write-ins are listed first).
Note that once a write-in has been adjudicated, the Resolve write-in button changes to show whether the choice was resolved (resolved to a qualified write-in or accepted as-is) or rejected. However, this can always be clicked again to bring up the pop-up and change the previous resolution.

Resolving a Write-in to a Qualified Write-in Name or Ballot Candidate

1. Find the contest name to adjudicate in the *Write-in Resolution Panel* to the left of the screen. If there are many contests with qualified write-ins, it may be necessary to scroll down.

2. Click **Resolve write-in** for the applicable choice (For more than one write-in for a given contest, first button for the first choice, second button for the second choice, etc.). The resolution pop-up will appear.

3. Select a name from the list of candidate names; both qualified write-in candidates and the ballot candidates are shown.

4. Click **Accept**. A green notification appears and displays that the write-in was accepted.
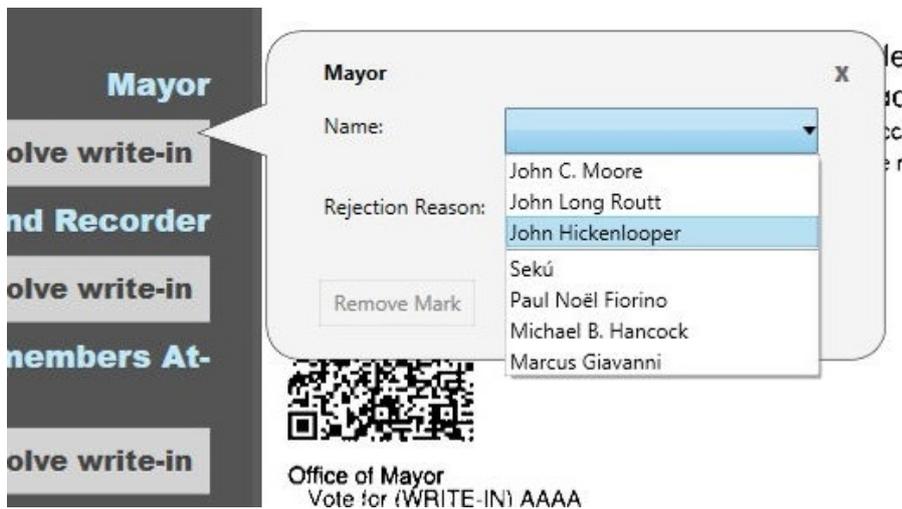
List of Qualified Write ins

Accepting a Write-in As-is - Digital Ballots

⚠ On digital ballots, this button may be used to return a previously rejected write-in to its original state. For example, an adjudicator accidentally rejects a write-in for a given contest/choice. The adjudicator may either go back and resolve the write-in to a qualified write-in name or click Accept As-Is to return it to a non-resolved but still counted write-in.

1. Find the contest name to adjudicate in the *Write-in Resolution Panel* to the left of the screen. If there are many contests with qualified write-ins, it may be necessary to scroll down.

2. Click **Resolve** write-in for the applicable choice (first button for the first choice, second button for the second choice, etc.). The resolution pop-up will appear.

3. Click **Accept As-Is.** A green notification appears displaying that the write-in was accepted as-is.

Rejecting a Write-in - Digital Ballots

1. Find the contest name to adjudicate in the *Write-in Resolution Panel* to the left of the screen. If there are many contests with qualified write-ins, it may be necessary to scroll down.

2. Click **Resolve write-in** for the applicable choice (for more than one write-in for a given contest, first button for the first choice, second button for the second choice, etc.). The resolution pop-up will appear.

3. Select a rejection reason from the provided list.

4. Click **Reject**. A red user notification appears displaying that the write-in was rejected.
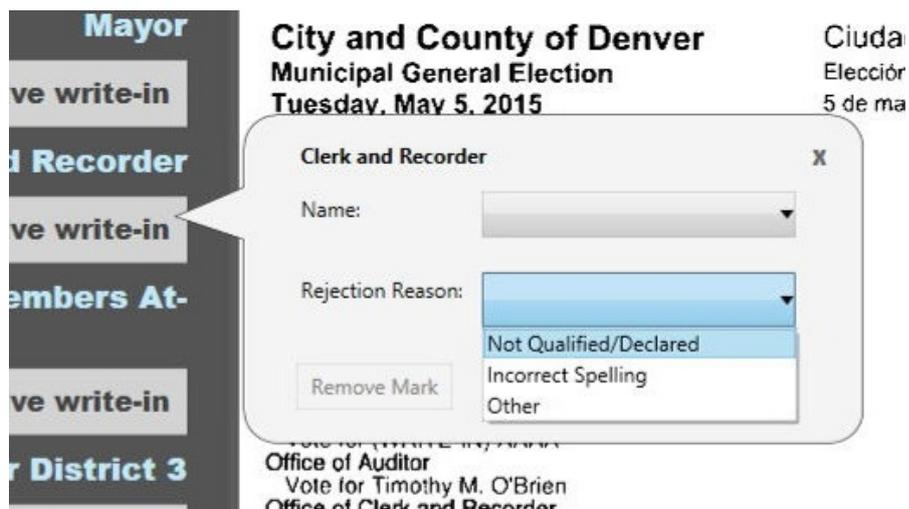
Rejectign Writein

13 Official Canvass and Post-Election Procedures

In the post-election period, the jurisdiction will continue to process Absentee/Mail ballots as well as Early Voting, Provisional and any exception ballots. This process involves:

1. Remaking of damaged and other ballots unreadable by the scanner.

2. Configure and Start Adjudication. General Adjudication users may start (see Adjudication Process and/or Adjudication Process - Digital Ballots).

3. Scan the batch of Absentee/Mail ballots on the tabulator.

   a. Put the Absentee/Mail ballots into a batch.

   b. Load election files for the `Absentee/Mail ICC' tabulator handling all precincts to scan the ballots.

   c. Clearly label the batch just scanned and store in designated container.

   d. Repeat steps to complete scanning of all batches.

   e. Complete the adjudication of all ballots with outstack conditions (see Adjudication Process and/or Adjudication Process - Digital Ballots).

   > ⊘ Ballot adjudication may be done in parallel with scanning on ICC. This section assumes that the Adjudication Administrator has configured and started adjudication on the EMS server. Procedures for adjudicating ballots are described in detail in Adjudication Process and Adjudication Process - Digital Ballots and will not be repeated in this section.

   f. Get the Adjudication Administrator to submit all adjudicated batches.

4. Scan and process the Provisional ballots.

5. Scan the remade ballots on appropriate ImageCast Central tabulators.

6. Resetting result files to allow for adjudication for all results imported on election night with "Skip Adjudication" option selected:

   a. Display a list of loaded results, by clicking on the Result Files option in the Activities Navigation Panel (General group).

   b. In the Result Files main activity screen omit the search criteria and click on the Search button to list all result files.

c. Use the Sort functionality to identify result files that are in status "Skipped Adjudication".

d. Select all result files in status "Skipped Adjudication" and click on the Reject button - this will change the status of those result files from "Published" to "Rejected" state.

e. Then, select those same result files and click "Reset" - this action will change the state of those result files from "Rejected" to "Initial".

f. Finally, click "Allow Adjudication" for all those result files that will result in their adjudication state being transformed from "Skipped" to "Pending Adjudication".

7. Complete adjudication for ballots scanned and rescanned as described in this section (see Adjudication Process and/or Adjudication Process - Digital Ballots).

8. Validate and publish all remaining results into RTR. Run the Statement of Votes Cast report in the RTR.

9. Back up election project data and results on the EMS Server.

10. Stop adjudication on the EMS Server.

11. Perform post-election system back up.

13.1 Configure and Start Adjudication

At the beginning of the Official Canvass period, Adjudication may be configured and started by following the procedures in Adjudication Administration.

13.1.1 Dealing with Batches Mistakenly Accepted on ICC

In case when ICC batches mare mistakenly accepted and need to be excluded from tally (the batch must be spoiled), the ICC, EMS and Adjudication Administrators will follow the procedure as described in the Spoiling a Batch section.

13.2 Processing Provisional Ballots for Official Canvass

Any provisional ballots from Election Day, from voters whose eligibility has been verified, are scanned in post-election period. The Provisional ballots are scanned on "ICC Election Day" tabulator that handles all precincts.

1. Put the Provisional ballots into a batch.

2. Load election files for the "ICC Election Day" tabulator handling all precincts to scan the Provisional ballots.

3. Scan the batch of Provisional ballots on the "ICC Election Day" tabulator handling all precincts.

4. Complete adjudication of all ballots with outstack conditions, re-scanned in the steps above (see section Adjudication Process and/or Adjudication Process - Digital Ballots).

5. Get the Adjudication Administrator to submit and publish all of the batches.

13.3 Processing Remade Ballots for Official Canvass

Any remade ballots are scanned in post-election period. All ballots prepared as duplicates of damaged voted ballots shall be of a distinctive color, or be identifiable by other distinguishing means, clearly labeled "duplicate," and shall be given a serial number which shall also be recorded on the damaged ballot. In creating the duplicate ballot, one board member shall vote positions marked on the damaged ballot, and shall enter a facsimile of the write-in vote(s), if any. Efforts should not be made to match the handwriting characteristics of the voter when entering these write-in facsimiles. Particular attention must be paid to completing or not completing the vote targets opposite the write-in spaces as the voter did or failed to do. Another member shall verify that the voting position marks and write-in entries (including vote target completions or lack thereof) on the duplicate ballot exactly-match those on the damaged ballot. Duplicates of damaged ballots are scanned on the ImageCast Central tabulator connected to the appropriate Counting Group. For example, if the remade ballot was an Absentee/All Mail ballot, then it should be scanned on an "Absentee/All Mail ICC" tabulator that has been connected to the Absentee/All Mail counting group.

1. Put the remade ballots into a batch.

2. Load election files for the ImageCast Central tabulator connected to the correct /corresponding counting group for the batch of remade ballots to be scanned.

3. Scan the batch of remade ballots on the ImageCast Central tabulator connected to the correct/corresponding counting group.

4. Complete adjudication of all ballots with outstack conditions, re-scanned in the steps above.

5. Get the Adjudication Administrator to submit adjudicated batches.The adjudicated results will be later imported to RTR for publishing.

13.4 Resolving Write-Ins

Write-ins are resolved in Adjudication or RTR. If Adjudication is a part of the workflow, then the write-ins will be resolved in Adjudication application. However, in case Adjudication is not used, the write ins can be resolved in the RTR application as well.

The Result Files loaded on Election Night, for all Election Day ImageCast Evolution tabulators that contain ballots with qualified write-in votes (as well as write-in ICC tabulator if applicable), will have to be set to Rejected state in the RTR application in order to resolve write-in votes. After write-in votes have been resolved, the Result Files will be published again.

1. Retrieve the ballots containing qualified write-in votes, that were removed from the ImageCast Evolution Secondary ballot box chamber.

2. Start the RTR application.

3. Open the Election Project.

4. Select Result Files in the left hand menu bar. The Result Files main activity screen appears.

5. Tabulator, Tabulator Type, and Result State drop down menus may be used to filter the search results.

6. Click Search to list results.

7. Select the results that you wish to reject and click Reject button.

8. Click Yes to confirm your action in the Question dialog that appears.

9. Click Close in the Information dialog that appears once the process is complete.

10. Select the Result File you wish to enter the write-in names for.

11. Select the contest containing the write-in votes from Contest drop-down list. Make sure that Use Summary Results checkbox is unchecked.

12. Select Contest from contest table.

13. Enter the number of votes for the qualified write-in candidate in the bottom right corner of the window.

   > ⊘ Qualified write-ins that were previously added to this contest through EED will appear on this list.

14. Click Save button in the upper right corner of the results screen.

15. Repeat steps 13 through to 15 for each ballot ID.

16. Repeat steps 11 through to 15 for each contest in this result file containing write-in votes.

17. Click Validate and Publish to publish the result files.

18. Click Yes to confirm the action in the Question dialog.

19. Click Close when the Info dialog appears.

20. Click Close when the success dialog appears.

13.5 Resolving Ambiguous Marks

Ambiguous marks are handled in two ways:

- The ImageCast Evolution tabulator will warn the voter of ambiguous marks and return the ballots to the voter for second chance voting.

- On ImageCast Central, all ballots are scanned and passed to Adjudication. Ambiguous/Marginal marks are then turned into undervotes or overvotes in Adjudication.

13.6 Complete Adjudication of all Ballots with Outstack Conditions Scanned on ImageCast Central

Most of the ballots will be already adjudicated by this point, since adjudication can be run concurrently with scanning of the ballots. Make sure that all ballots with outstack conditions have been adjudicated and that all batches have been submitted to RTR for tallying. Procedure on how to configure and start adjudication can be found in section Adjudication Administration. Procedures for adjudicating ballots are described in detail in Adjudication Process and Adjudication Process - Digital Ballots and will not be repeated in this section. For instructions on how to submit adjudicated batches see Submission and Publishing of Batches.

13.7 Import, Validate and Publish Results in RTR

The ballots from ImageCast Central that have had their Secondary Path set to the appropriate location for automatic loading to RTR (provided automatic loading of results has been enabled in RTR) will automatically be loaded into the RTR. The rest will be manually imported to RTR via loading either from the CF card or from the

appropriate directory.

1. Start the RTR application.
2. Open the Election Project.
3. Click **Actions** and choose **Load Results From Directory**.
4. The *Load* dialog appears. Uncheck the **Show Loaded Files** checkbox.
5. Click **Browse** to browse to the source directory.
6. Click **OK** and the *Load* dialog will open.
7. Leave file types as **Results**.
8. Select the files you wish to load and click **Load**.
9. Once all result files have been loaded, click **OK** in the *Load* dialog window to close it.
10. Click **Close** to close the dialog.
11. Select **Result Files** in the left hand menu bar in the RTR application. The *Result Files* main activity screen appears.
12. **Tabulator**, **Tabulator Type**, and **Result State** drop down menus may be used to filter the search results.
13. Click **Search** to list results.
14. Select all results that you wish to include in the reports and click **Validate & Publish**.
15. Click **Yes** to confirm your action in the *Question* dialog that appears.
16. Click **OK** in the *Information* dialog that appears once the process is complete.

13.8 Statement of Votes Cast Report

To create the Statement of Votes Cast Report, do the following:

1. Expand *Reports* and click on the **Statement of Votes Cast** option in the *Activities Navigation Panel*. The *Statement of Votes Cast Report* context sensitive screen appears.

2. Select the desired criteria in *Parameters* and *Filters* sections of the *Statement of Votes Cast Report* context sensitive screen.

3. Under the **District Type** section, select the top-level district (for example, County). Ensure that other **District Types** are not selected.

4. Click on the **Create Report** to generate the report.

5. The report will be displayed on the right side of the screen.

6. To export and save the report, click on the **Save** icon in the shape of the copy disk (located on the top right tool bar above the report), select the format in which you wish to save the report.

7. The *Windows* browse dialog window will appear. Navigate to the location where you want to save the report and click on the **Save** button.

8. Create **SOVC** reports for the other district types, as required. Under the **District Type** section, check the appropriate district type and uncheck all other district types. Repeat steps 4 to 7 to generate and save the report for each district type.

13.9 1% Manual Tally Procedures

For the purpose of validating the accuracy of the computer count, a public manual recount of the ballots cast in at least one percent of the precincts shall be conducted. Precincts must be chosen at random. If the random selection of precincts results in an office or ballot measure not being annually recounted, as many additional precincts as necessary shall be selected and manually-recounted as to any office or ballot measure not recounted in the original ballot sample. Pursuant to the California Elections Code, randomly-selected precincts are to be chosen by an individual who has been designated by the Election Official. This person cannot be the same person, or a relative of the person, who programmed the election. Selected precinct numbers shall not be revealed to such personnel until the Semi-Official count is complete. In the event of unit failure after the semi-official or official ballot tally process has begun, and regardless of whether or not the equipment is to be returned to service following repair and successful processing of the prescribed logic and accuracy tests, the ballots from the last precinct tabulated on the equipment prior to the failure shall be conducted in the automatic Manual Recount. If a discrepancy is discovered between the automated tabulation, and the automatic Manual Recount tabulation, each precinct's ballots which had been read and processed by the failed equipment, subsequent to the time of the last successfully completed logic and accuracy test by the failed equipment, shall be tabulated again.

Please see California Elections Code Division 15, Chapter 4, Article 5, Section 15360 for Manual Tally Procedures.

13.10 Manual Entry of Results into the RTR application

In case that, for any reason, there is a need for manually entering results into the RTR application, do the following:

1. Click on the **Result Files** menu item in the left hand navigation panel. The *Result Files* main activity screen appears.

2. Select the tabulator that you wish to enter results for from the **Tabulator** drop down menu and then click on the **Manual Entry** button from the toolbar. The .... MANUAL.DVD - Result File dialog window appears allowing results to be manually entered into the system.

3. Select that precinct in the Precincts drop down menu.

4. Enter **Total Voters** and **Ballots Cast** for this particular batch.

5. Enter results for the each contest by selecting **Contest** on the left side of the dialog. All choices associated with the contest will appear on the right side. The user has options to enter number of votes for each candidate, number of write-ins, number of over and under votes for the selected contest.

6. Click on **Save** or **Save and Close**.

13.11 Exporting Audit Images

The Export audit images functionality will go through each scanned ballot image that was extracted previously from the tabulators and will categorize each image and export them into separate subfolders per category. For each export a separate subfolder will be created. The export audit images screen either applies to all result files or to the currently selected result file. The user can define which images to export and how they should be exported by adding and selecting filter criteria.

The following lists the different filter criteria, some of which allow sub selection:

- Contest: adding this filter criterion splits images per contest in separate subdirectories prefixed with "Contest "and followed by contest name. The filter allows the user to select a specific contest, resulting in an export where only images for ballots containing that contest are included.

- Precinct: adding this filter criterion splits images per precinct in separate subdirectories prefixed with "Precinct " followed by precinct name. The filter allows the user to select a specific precinct, resulting in an export where only images for ballots cast in that precinct are included.

- Ballot Type: adding this filter criterion splits images per Ballot Type in separate subdirectories prefixed with "BT" and followed by the name of the Ballot Type. The filter allows the user to select a specific Ballot Type, resulting in an export where only the images of ballots that belong to the specified Ballot Type are included.

- Ballot Exception: adding this filter criterion splits images per ballot exception in separate sub directories prefixed with "BallotException " followed by each of the following categories:

    - Blank Ballot: no marks were detected for any of the contests.

    - Blank: no marks were detected for the current contest, or if no contest criterion was added, no marks were detected for at least one contest.

    - UndervotedNotBlank: the current contest was undervoted, but not blank, or if no contest criterion was added, undervoted contest detected was not blank.

    - Regular: current contest was marked equal to the vote for, or if no contest criterion was added, all contests were marked equal to their vote for.

    - Writein: current contest had one of the write-in positions marked, or if no contest criterion was added, a contest had one of their write-in positions marked.

    - Overvoted: current contest was overvoted, or if not contest criterion was added, a contest was overvoted.

- Tabulator: adding this filter criterion splits images per tabulator in separate subdirectories prefixed with "Tabulator " and followed by tabulator name. The filter allows the user to select a specific tabulator, resulting in an export where only images of ballots cast in that tabulator are included.

- Polling Location: adding this filter criterion splits images per polling location in separate subdirectories prefixed with "PollingLocation " and followed by polling location name. The filter allows the user to select a specific polling location, resulting in an export where only images of ballots cast at that polling location are included.

- Counting Group: adding this filter criterion splits images per counting group in separate subdirectories prefixed with "CountingGroup ", followed by the counting group name. The filter allows the user to select a specific counting group, resulting in an export where only images of ballots cast in that counting group are included.

- Batch ID: adding this filter criterion splits images per batch in separate subdirectories prefixed with "BatchId ", followed by the batch id.

- Published: adding this filter criterion separates images depending on if an image has been published. The subdirectories will be prefixed with "Published " followed by either "notpublished" or "published".

The user can add each filter criterion once. The order in which they are added determines the folder structure that is created on export. Once the export is started using the Export button the system will create an "AuditImages" directory in the project's "Results" subfolder. Within that directory a subfolder named "Audit" is created named followed by a timestamp (for example: Audit2013 12 17 13 58 00). Within that subfolder a hierarchy of subfolders are created matching the order of the filter criteria added by the user. The user can clear all filter criteria by pressing the Remove Filter button.

13.12 Processing of Unused Paper Ballots

Unused Ballots will be processed in accordance with the California Elections Code. Precinct officers will seal or deface unused precinct ballots. Election personnel in the office of the Election Official will seal or deface Unused Absentee Ballots and un-issued ballots. The Election Official may inspect and count unused ballots as necessary to reconcile the ballot tabulation during the Official Canvass.

13.13 Backup and Retention of Election Material

13.13.1 General Procedures

Upon the certification of the election results, the California Elections Code applies to the handling, security and disposal of elections materials. The retention period for related election materials is six months for all non-federal elections. The federal election retention period is 22 months. Retention periods may be extended in the event of a court challenge.

13.13.2 Security of Materials Following Ballot Tally

- Either on Election night during vote tally, or following vote tally, all of the event log, ballot images and summary totals from each cartridge used in the election shall be backed up to the tabulation database.

- The local Election Official shall provide for retention and storage of the database containing the cartridge information and of any other data processing materials related to the vote tally in accordance with statutory retention requirements.

- After vote tally, all of these materials shall be placed in locked storage in a secure location, and shall remain there until the expiration of the period for challenging elections and for as long as required by law, unless a court orders their release.

- During the period of storage, the local Election Official or the Secretary of State may order the release of the materials for purposes of a manual recount or for election verification. After this process, they shall be returned to storage.

13.14 Post-Election Backup

Make sure that the EMS Administrator has backed up the official election results. This includes the following:

1. A backup of the Election Project containing the results from the election. The project package created during this back up procedure must be manually copied and saved to a locked storage in a secure location. Name this folder distinctly so it can be identified in the future.

   > ⊙ **Do not rename the project package.**

2. A backup of the ImageCast Evolution by storing the labeled CF cards from ICE units in a locked storage in a secure location. ICE results that were imported into the EMS RTR during the Election Day will be preserved within the backed up Election Project package.

3. A backup of all ICC election files containing results by moving the entire **C:\DVS** to a safe place.

13.15 Stopping Adjudication Process

Stopping adjudication should only occur after the Official Canvass has been completed. To stop adjudication, follow the instructions in section Stopping Adjudication Process and then return here to continue post-election activities.

13.16 Post-Election Logic and Accuracy Testing

Although not required by California law, this Post-Election L & A can be used to verify that the tabulators logic and the ability to tally ballots accurately has not been compromised since the Pre-Election L & A. The Post-Election L & A can be executed following the same instructions from Logic and Accuracy Test Procedures.

14 Post Election Backup and Recovery Procedures

14.1 Preparation

Refer to the Acronis documentation for instructions on how to create an Acronis boot disc (https: //kb.acronis.com/content/21728). During the boot disc creation process, you have the ability to install device drivers on the disc.
Drivers can also be loaded from a removable storage device after booting into Acronis.
For the Dell PowerEdge R630 server, the drivers for the Dell PERC H730 RAID controller should be preloaded on the disc, for convenience.

In addition to the Acronis boot disc, you will need a removable USB storage device to save the hard disk image backup files. A portable USB hard drive or USB thumb drive should be used. The removable storage device should have at least 32 GB of free space to save the images from all three computers, however, the size required will depend on the size of the county and election. An External HD device of 2 TB can be used if size is a concern.

The removable storage device that is used to save the hard disk images during the backup and recovery procedures does not necessarily need to be the same device that is used for long-term storage of the images. It is recommended to keep multiple backups of the hard disk images, and to store them in a safe and secure location.

14.2 Acronis Backup

The following instructions describe the hard disk image backup procedure using Acronis. This procedure can be done on the EMS server or on any EMS workstation for which a full system backup is desired.
Power on the computer.
At the Dell logo screen, press the required key to access the Boot Manager.

- For the EMS Server this is **F11**

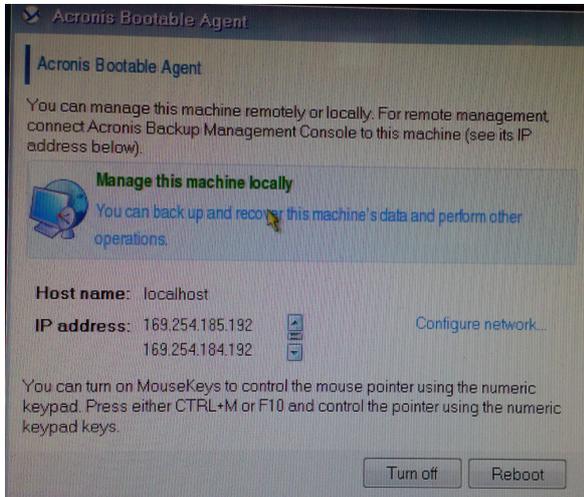- For EMS Workstation and ICC Workstation this is **F12**

⊘ If you have password protected the BIOS, you must enter the password to enter the Boot Manager.

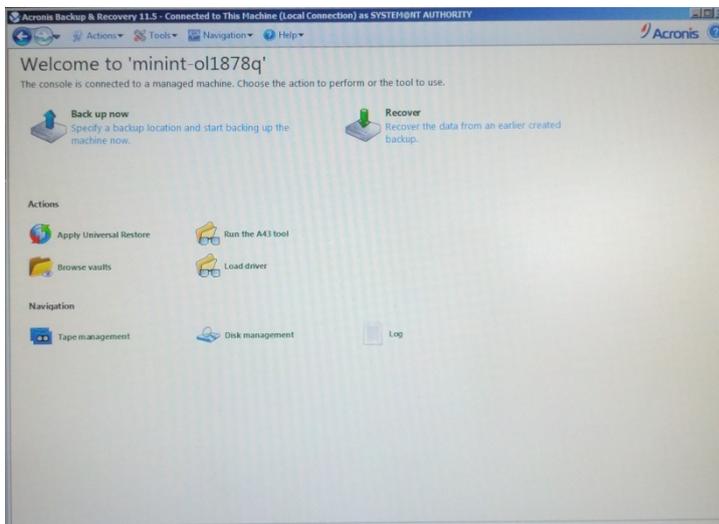Insert the Acronis boot disc into the DVD-ROM drive.

Wait a few seconds, then select the DVD-ROM drive as the boot device.

When the prompt appears, press any key to boot from the disc. This process will take several minutes.
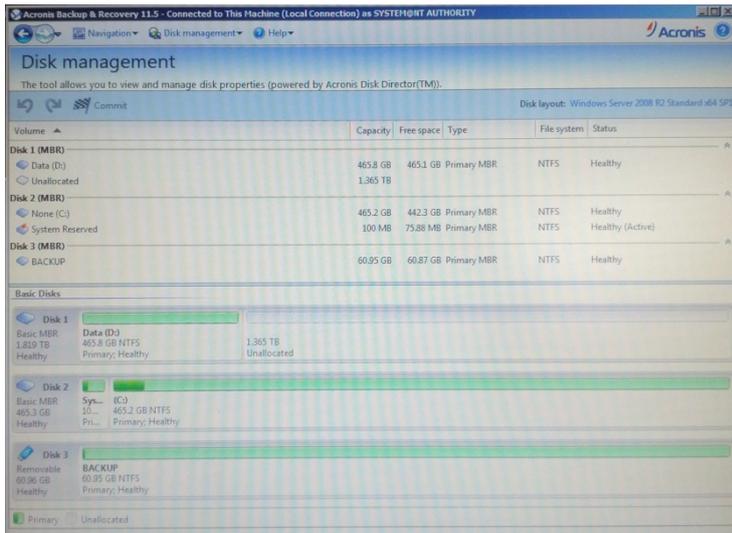

Acronis Bootable Agent screen

When this is complete, the **Acronis Bootable Agent** screen appears. Click **Manage this machine locally**.

Acronis - Welcome

You are presented with the Acronis Welcome screen. Click **Disk Management**.
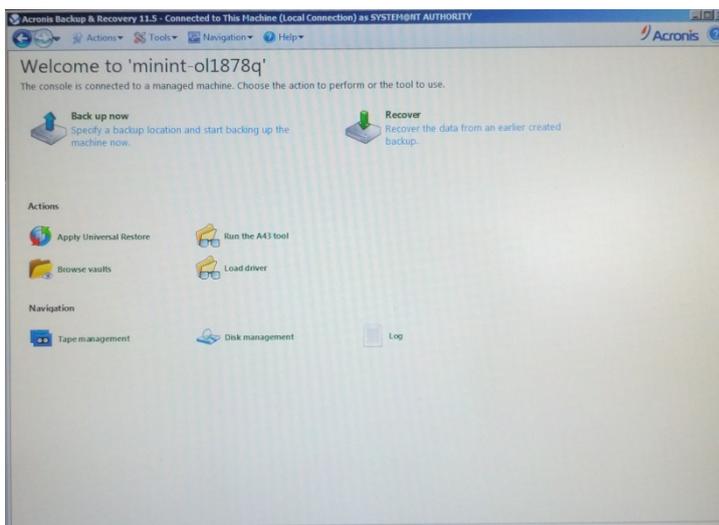
Acronis - Disk Management

Plug in the removable storage device that will be used to save the backup image. After a few seconds, the new disk will appear in the list of disks.

If the disk does not appear after a few seconds, try refreshing the view. If it still does not appear, unplug the removable drive and plug it into a different USB port.

⊘ On the ICC Workstation, the USB storage device can only be connected to the USB 2.0 ports on the back of the computer. The storage device will not be recognized if connected to the USB 3.0 ports. The USB 3.0 ports can be identified by the letters **SS** (Super Speed) along- side the USB symbol. USB 2.0 ports have only the regular USB symbol.

Return to the **Welcome** screen by clicking **Back** or selecting **Welcome** from the **Navigation** menu.

Acronis - Welcome

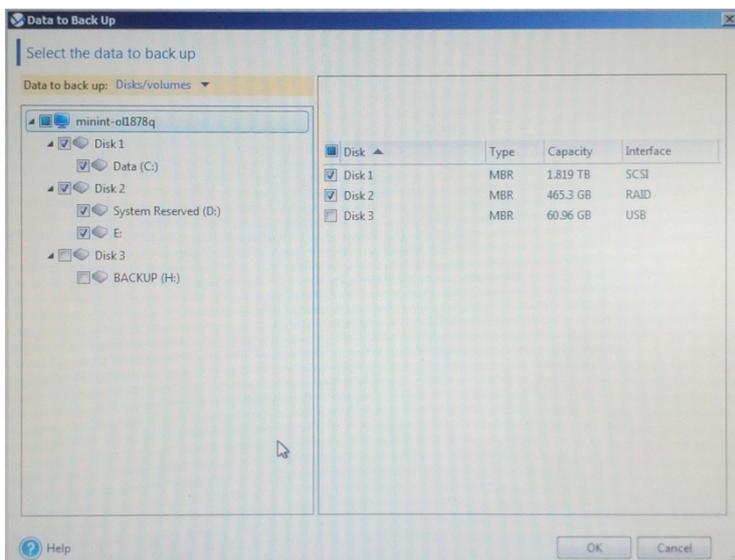On the Welcome screen, select **Back up now**.
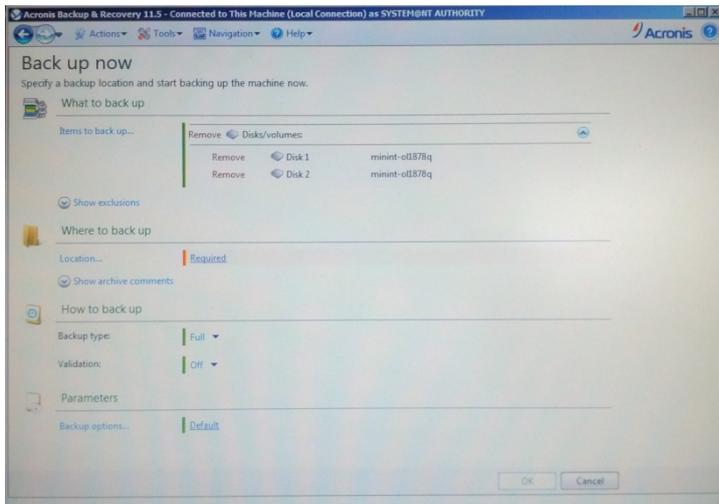
Acronis - Backup

Under **What to back up**, click **tems to back up…**.

Acronis - Items to Back Up

The **Data to Back Up** window opens. For the option **Data to backup**, select **Disks /volumes**.

The computer tree view will show the attached disks (including both internal hard disks and the removable backup drive). Each disk node can be expanded to show the volumes/partitions on the disk.

Select only the internal disk drives that belong to the computer. De-select the removable storage device (this is the destination disk for the backup).

NOTE: The drive letters shown in the Acronis environment may differ from the drive letters assigned in the Windows environment. The drives can generally be identified by their capacity and interface type.

The USB device that was connected to the system in the earlier step will be listed as one of the discs in "items to backup' section. Ensure that particular disc is excluded from things to back up. Example: if disk 3 is the USB removable disc, exclude that disc.
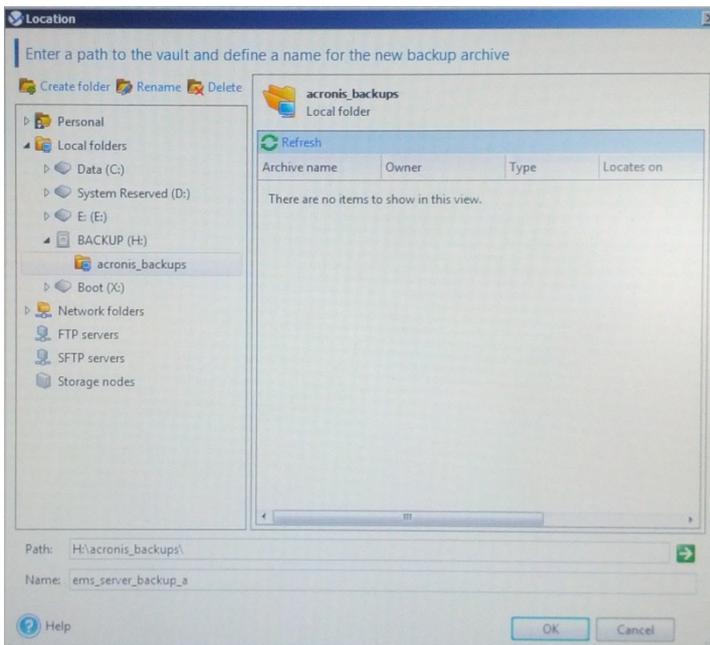
Click **OK** to close this window.
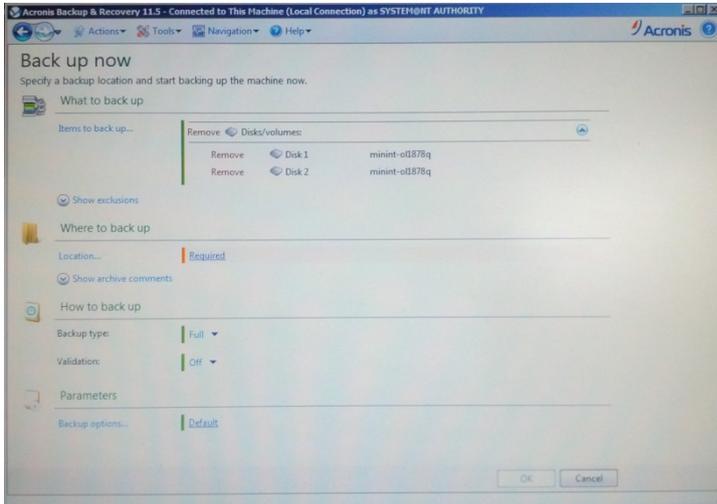
Acronis - Backup

Under **Where to backup**, click **Location....**.

Acronis - Where to Back Up

Expand the **Local folders** node, select your backup drive and select the desired path. You may create sub-folders on your drive by clicking the **Create folder** button. In the **Name** field, enter a name for this backup image. The name may not end with a number.

Click **OK** to close this window.
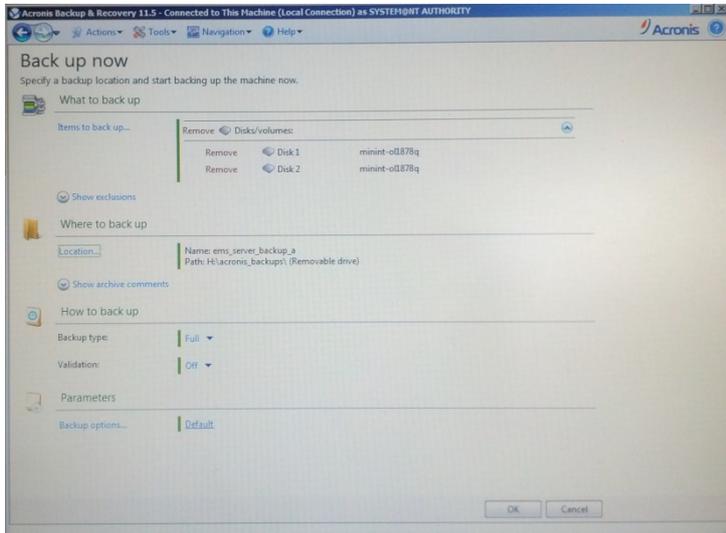
Acronis - Start Backup

When all desired parameters have been set, click **OK** to start the backup.
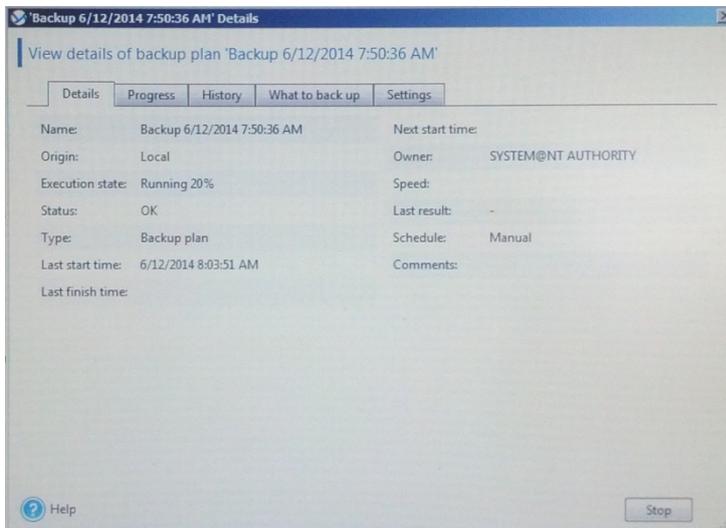
Acronis - Backup in Progress

The backup will take at least 20 minutes to complete, depending on the computer and the speed of your backup drive. No action is required during this time.
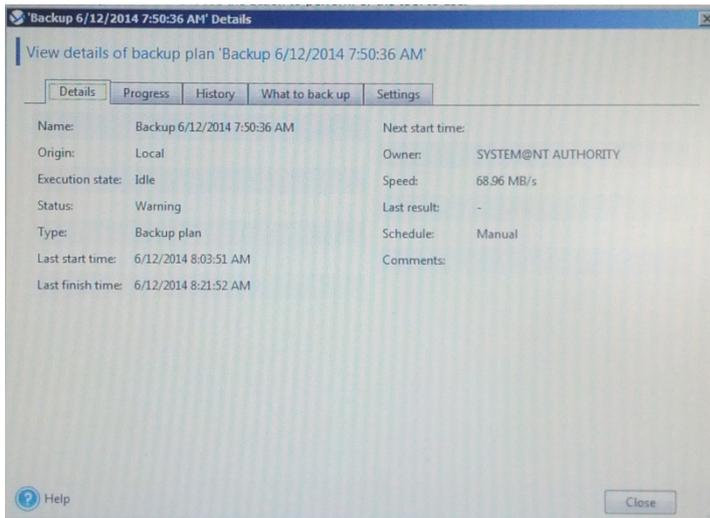
Acronis - Backup Complete

When the backup is complete, click **Close**.

> ✅ A warning will be displayed under **Status**. This is expected and can be ignored.

Remove the Acronis boot disk and the backup drive.
Close the Acronis window. The application will shut down and the system will reboot.

14.3 Acronis Recovery

The following instructions describe the hard disk image recovery procedure using Acronis.
Power on the computer.
At the Dell logo screen, press the required key to access the Boot Manager.

- For the EMS Server this is **F11**

- For EMS Workstation and ICC Workstation this is **F12**

> ✅ If you have password protected the BIOS, you must enter the password to enter the Boot Manager.

Insert the Acronis boot disc into the DVD-ROM drive.
Wait a few seconds, then select the DVD-ROM drive as the boot device.
When the prompt appears, press any key to boot from the disc. Acronis disc will be booted. This process will take several minutes.
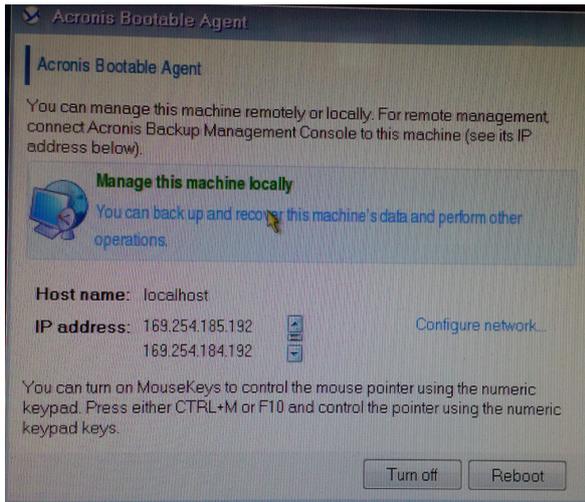
Acronis Bootable Agent screen

When this is complete, the **Acronis Bootable Agent** screen appears. Click **Manage this machine locally**.
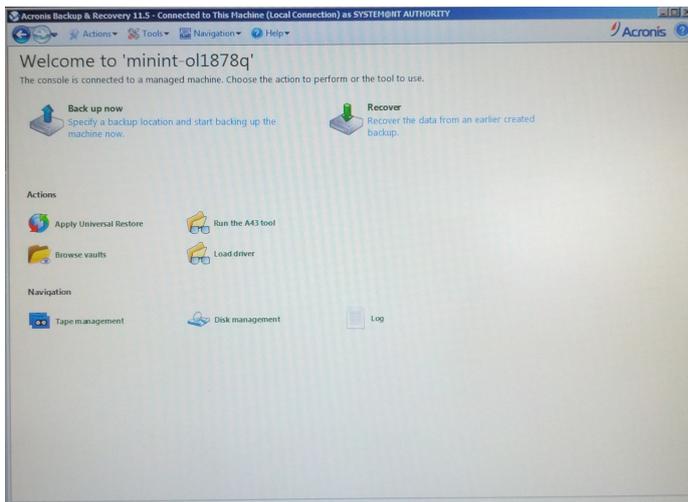
Acronis - Welcome

You are presented with the Acronis Welcome screen. Click **Disk Management**.
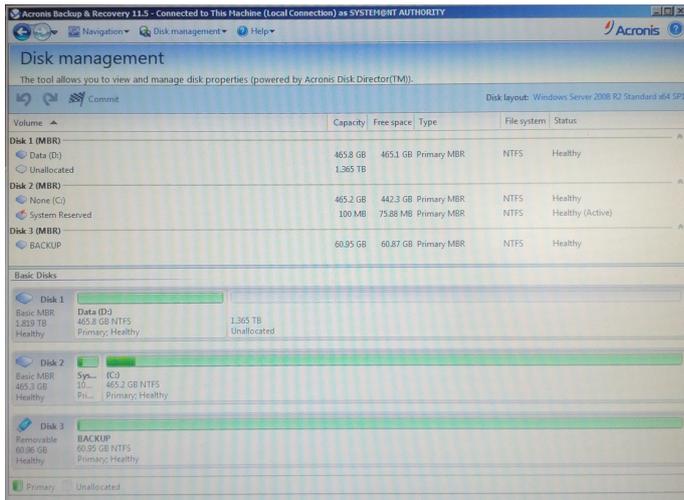
Acronis - Disk Management

Plug in the removable storage device that contains the backup image. After a few seconds, the new disk will appear in the list of disks.

If the disk does not appear after a few seconds, try refreshing the view. If it still does not appear, unplug the removable drive and plug it into a different USB port.

> ⊘ On the ICC Workstation, the USB storage device can only be connected to the USB 2.0 ports on the back of the computer. The storage device will not be recognized if connected to the USB 3.0 ports. The USB 3.0 ports can be identified by the letters **SS** (Super Speed) along- side the USB symbol. USB 2.0 ports have only the regular USB symbol.

Return to the **Welcome** screen by clicking **Back** or selecting **Welcome** from the **Navigation** menu.

Acronis - Welcome

On the Welcome screen, select **Recover**.
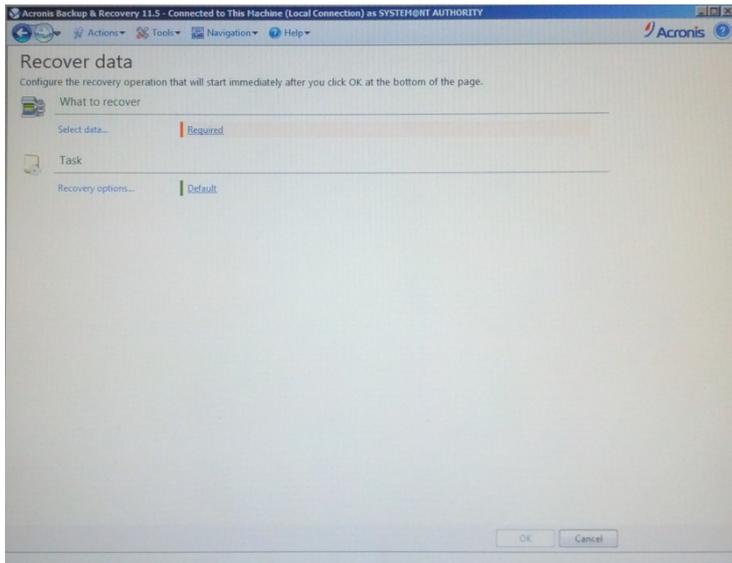
Acronis - Recover

Under **What to recover**, click **Select data…**.
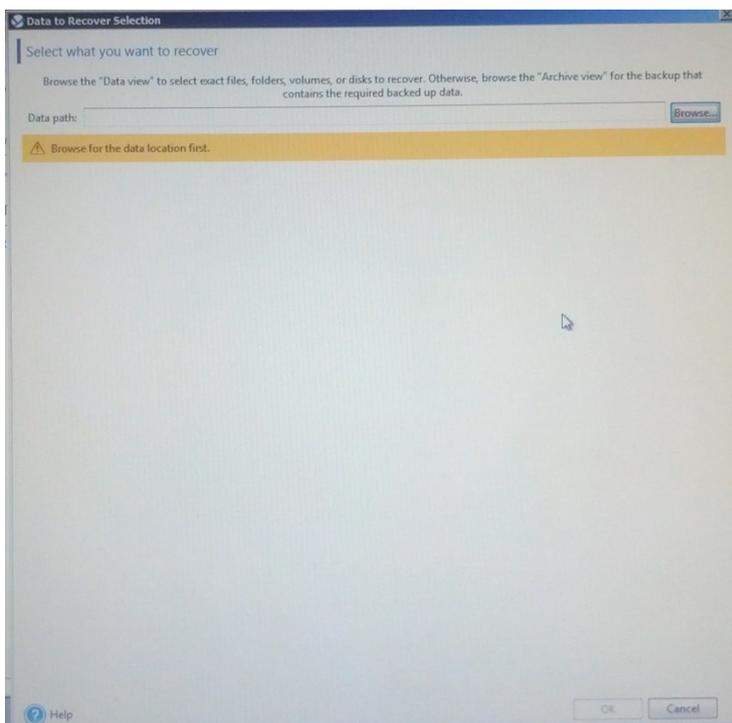
Acronis - Browse for Backup

Click **Browse**.
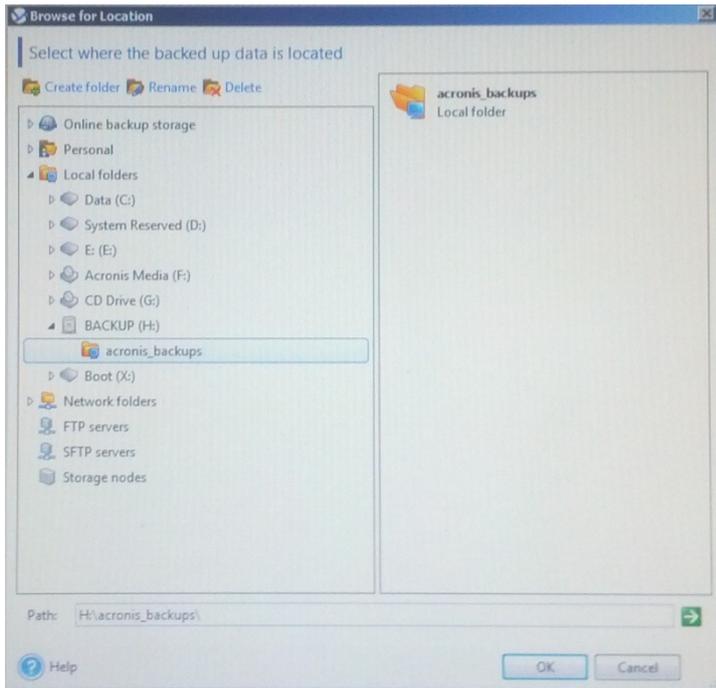
Acronis - Browse for Backup

Browse to the folder that contains the backup images.
Click **OK**.
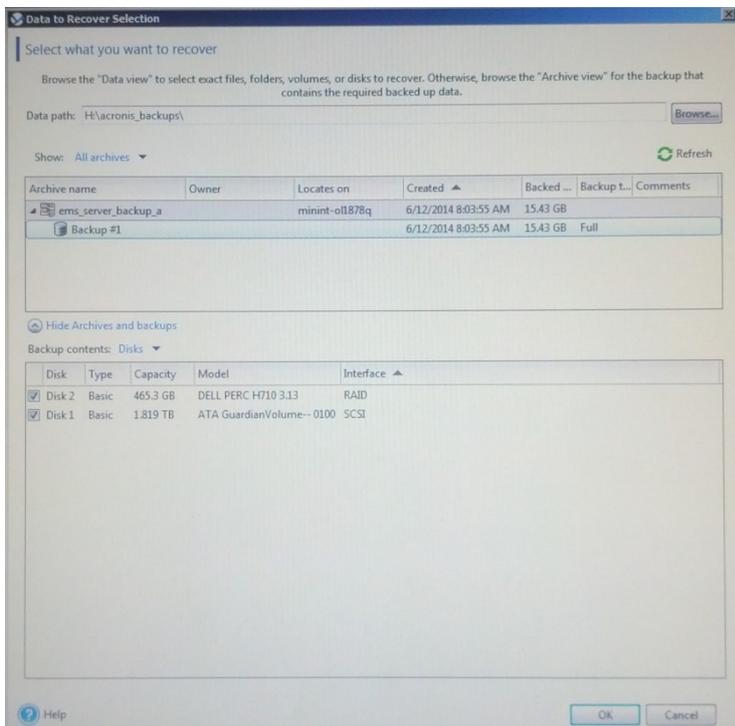
Acronis - Browse for Backup

Select the backup archive.
For the option **Back up contents**, select **Disks**.
Select all of the available disks.

> ⊘ For the EMS Server, there are two disks contained in the backup archive (the disk containing the operating system and the disk containing the EMS data). The EMS Workstation and ICC Workstation each have a single disk.

Click **OK** to close this window.
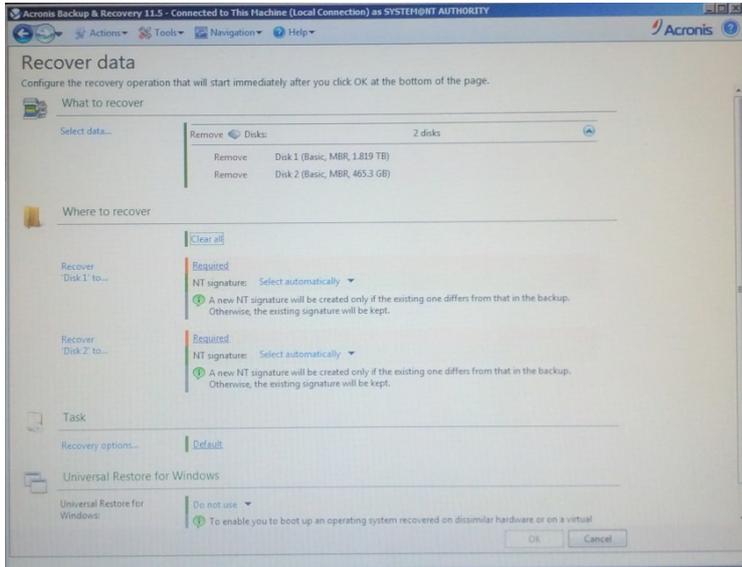
Acronis - Where to Recover

Under **Where to recover**, click **Clear all**.

> ⊘ When recovering the EMS Server, note the sizes of the two disks to be recovered. Regardless of how the disks are named, the size of each source disk should match the size of the destination disk.

Click **Recover 'Disk1' to...**
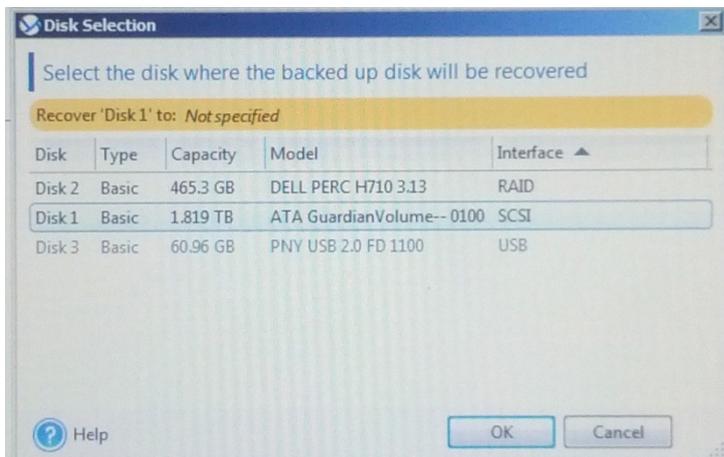
Acronis - Recover Disk 1

Select the destination disk for **Disk 1**.
Click **OK**.
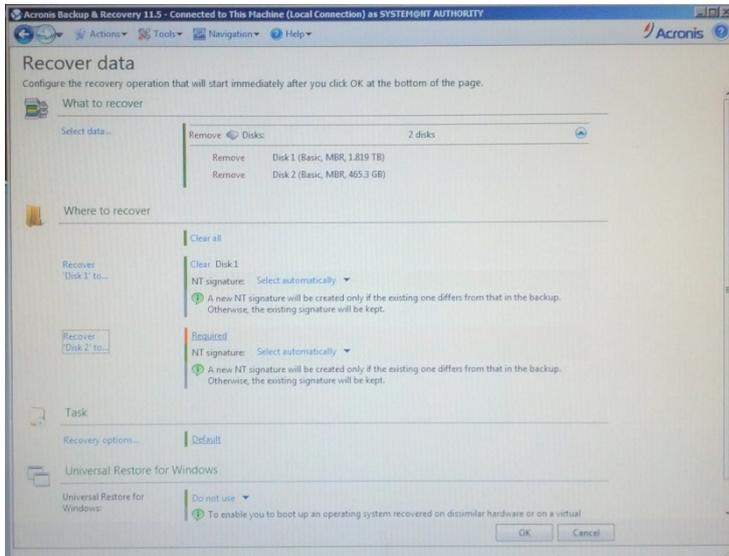
Acronis - Where to Recover

Click **Recover 'Disk2' to...**

> ⊘ On the EMS Workstation and ICC Workstation, there is only a single disk to recover, so this option will not be available.
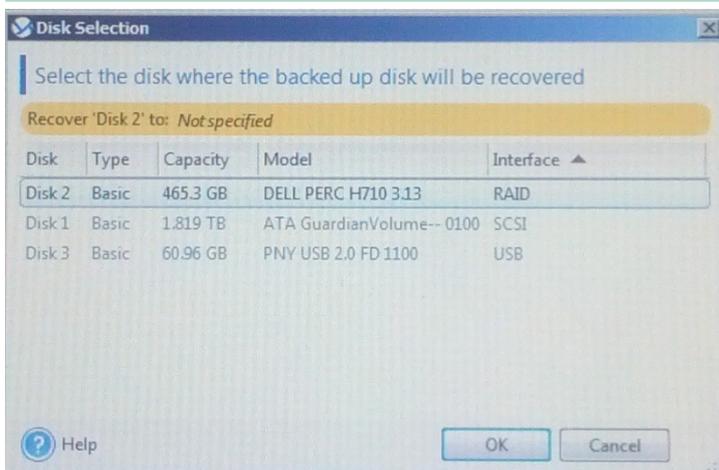
Acronis - Recover Disk 2

Select the destination disk for **Disk 2**.
Click **OK**.
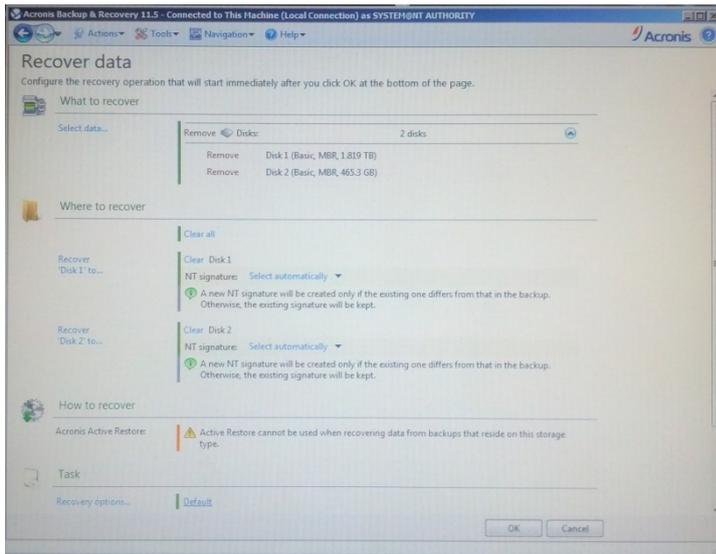
Acronis - Start Recovery

Click **OK** to start the recovery procedure.
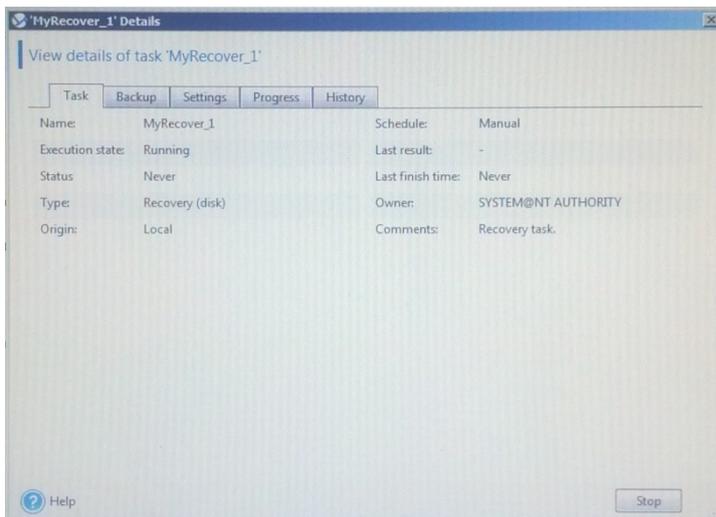
Acronis - Recovery in Progress

The recovery procedure will take at least 20 minutes to complete, depending on the computer and the speed of your backup drive. No action is required during this time.
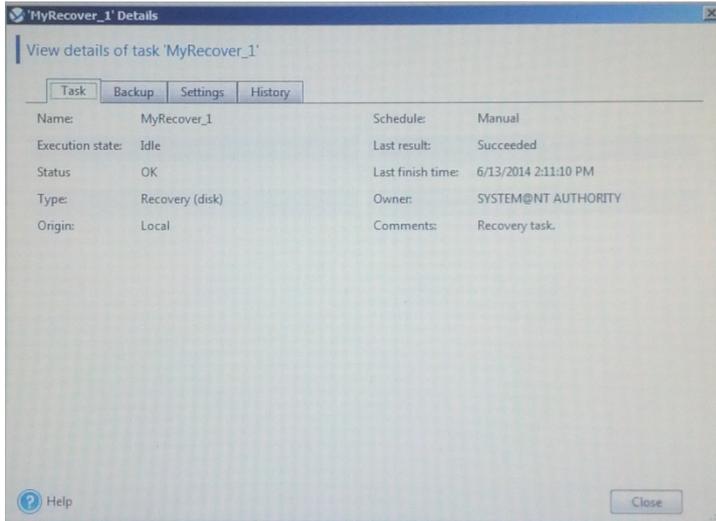
Acronis - Recovery Complete

Remove the Acronis boot disk and the backup drive.

Close the Acronis window. The application will shut down and the system will reboot. At the end of this chapter, election procedures are done and the rest of the chapters provide instructions on specific actions/functionalities and other system information but don't have to be followed in order.

15 Recount Procedures

15.1 Request for a Recount

A request for a Recount and the conduct of the Recount shall be made in accordance with the California Elections Code Division 15, Chapter 9, Articles 1 through 5, and California Administrative Code Title 2, Division 7, Chapter 8.1.

15.2 Conducting an Electronic Recount

15.2.1 Creating Recount Election Projects

1. From the live election project, create a duplicate copy to be used for the recount by navigating to the **Election Project** menu in the EMS Election Event Designer client application.

2. Click **Save As**. Ensure that your duplicate copy is given a unique name by including the word 'Recount', or similar, in the title for clarity.

3. Close the live election project by clicking **Election Project** in the top toolbar, and selecting **Close Project**.

4. Open the duplicate project from the **Election Project** top toolbar by selecting **Open Project**, using the same credentials used in the original project.

5. Once you have opened your Election Project, navigate to the **Settings** menu item on the top toolbar and click **Election Event Properties**. Roll the election project back to the 'Ballots Generated' stage by selecting the **Ballots Generated** option from the **Election Project Status** field.

6. If required, create or modify your Device Configuration settings for the tabulator(s) to be used in the recount. Note that you must configure your settings to sort or return overvoted and undervoted ballots so that they can be forwarded to the Manual Recount Election Officials.

7. Choose a single contest to be recounted and disable all other contests by highlighting them and clicking **Disable** in the Contest context sensitive screen. At this point, there are two possible options:

   - Use the same tabulators for the recount as were used in the original election.

   - Use ImageCast Central high speed scanners if your county has this option available.

8. If you wish to use the same tabulators for the recount as were used in the original election, create new election files by expanding the **Action** menu and clicking **Create Election Files**. Proceed to Section Recounting the Ballots.

9. If you opt to use ImageCast Central high speed scanners to conduct the recount, add new ICC tabulators to your project by performing the following:

   a. Expand the **Tabulation** item from the Navigation menu and select **Tabulators** to open the Tabulation - Tabulators context sensitive screen.

   b. Click **Search** to populate the list of existing tabulators.

   c. Select all existing tabulators and click **Delete**.

   d. Click **Yes** in the confirmation dialog that appears.

   e. To create a new tabulator for use in the recount, click **Create New**. A Tabulator dialog appears.

   f. Enter the tabulator's name and number in the specified fields. Select a polling place from the **Polling Place** drop down.

   g. Select the ImageCast Central from the **Tabulator Type** drop down. You can also select the programming group from the **Programming Group** drop down.

   h. Select the appropriate DCF configuration from the **Device Settings** drop down. You may need to create a new DCF configuration to meet your needs for the recount.

   i. To connect this tabulator to the desired precinct(s), click the **Precincts** tab and click **Connect**. The **Tabulated Precincts** dialog appears.

   j. Click **Search** to populate the list of available precincts.

   k. Select the desired precinct(s) and click **Assign and Close**. The precinct(s) now appear in the **Precincts** tab of the **Tabulator** dialog.

   l. Click **Save and Close**.

   m. Repeat the steps above for each tabulator you wish to create for the recount.

   n. Create new election files by expanding the **Action** menu item in the top toolbar, and selecting **Create Election Files**.

15.2.2 Recounting the Ballots

Using your newly-created election files, program the Compact Flash memory card(s) and iButton Security Key(s) for the tabulator(s) to be used in your recount, and scan the ballots to be recounted through the tabulator(s). Ballots containing overvotes and undervotes will be sorted by the tabulators during this process either by returning the ballots if using the ImageCast Evolution, or, if using the ImageCast Central, by stopping the batch. Forward the overvoted and undervoted ballots to the manual recount officials.

15.2.3 Consolidating Recounted Results

1. When all scanning is complete, generate results reports from your tabulators. These will contain the results for all paper ballots that do not contain overvoted or undervoted contests. Because all other contests have been disabled in the database, the tabulator results reports only contain results for the contest of interest.

2. Load all of your results files and ballot images into the Results Tally & Reporting application.

3. When the manual recount results are complete, input them into the EMS Results Tally & Reporting application using the manual entry feature.

4. When all results have been entered into the database, validate and publish all of them.

5. Generate results reports as required using Results Tally & Reporting standard reporting functionality.

16 EMS Administrator's Role in Managing System Security and Integrity

The Democracy Suite platform, and all of its related project and development processes, closely follows the practices and principles embodied in the ISO 27000 series of recommendations (ISO 27001 and ISO 27002). The security mechanisms applied from system design through deployment are based on extensive risk analysis and subsequent risk mitigation decisions.

It is important to state that appropriate processes must be defined and followed by all business stakeholders within the system, including election staff members of the jurisdiction and Dominion Voting as the vendor, in order to ensure the system's proper security and protection. To this end, Democracy Suite provides the enabling techniques to allow jurisdictions to follow best security practices and maintain compliance with local law.

The Democracy Suite Threat Register is outlined in section Threat Register.

16.1 Physical Security of System and Components

Election Event Designer has the ability to perform the following logical input activities:

- Restore the election project from the previously-defined election project backup file, packed in the compressed ZIP archive:

- Import election definition data from a third party entity in the form of an XML election definition file.

- Import recorded dynamic audio files produced by the EMS Audio Studio client application from the EMS workstation.

- Import recorded static audio files in the form of SPX/OGG speech-optimized audio files.

- Import political party symbols/logos.

- Import templates (contest, choice, instructions) for ballot styling in Rich Text Format. The templates are defined as XML files with a .tco file extension.

- Import ImageCast Central Device Configuration Files, and ImageCast Evolution Machine Be havioral Settings in XML file format.

- Import EMS system permission rule sets in XML file format.

Election Event Designer provides the following logical output interfaces:

- Ballot images in PDF print-ready format (PDF 1X-a) for use by the ImageCast devices.

- Audio files in SPX/OGG format and ballot images in PNG format for ImageCast Evolution functionality.

- Election definition files in a proprietary binary file format to be used by the ImageCast Central tabulators.

- Credential authentication data used to program iButton Security Keys to be used by the ImageCast tabulators.

- Device Configuration Files in proprietary binary format to be used by the ImageCast Central tabulators.

- Machine Behavior Settings files in XML format to be used by the ImageCast Evolution tabulators.

- A variety of system level reports in XML or PDF format to be used by human or electronic stakeholders.

- Audio library definition files in XML format, which define the content to be recorded using the EMS Audio Studio client application.

- Election programming station definition file in XML format, which defines the relationship between election files, ImageCast tabulators, and iButton Security Keys to be used by the EMS Election Data Exchange Station, where applicable, in the programming of compact flash memory cards.

- A ballot on demand definition file which maps polling subdivisions to ballot IDs and allows users to perform polling place ballot-on-demand printing.

Election Event Designer also exposes/provides the following logical input/output interfaces:

- The EMS Data Layer Transactions (serialized binary data) toward the EMS Database Server.

- The EMS Data Layer Transactions (serialized binary data) toward the EMS Application Server for optional mixed local intranet and remote Internet configuration.

The EMS Database Server exposes/provides the following logical input/output interfaces:

- The Microsoft SQL Database Engine (serialized binary data) for operation in Election Event Designer and Results Tally & Reporting.

- The Microsoft SQL Database Engine (serialized binary data) for use in the EMS Application Server for optional mixed local intranet and remote Internet configuration.

The EMS Application Server exposes the following logical input/output interfaces:

- The serialized binary communication channel for use in the remote Election Event Designer and Results Tally & Reporting client applications.

- The serialized binary communication channel for operation in the EMS Database Server.

Results Tally & Reporting allows for the following logical inputs:

- User input.

- Result files in proprietary binary file format collected from the ImageCast Central tabulators.

- Result files in XML format collected from the ImageCast Evolution tabulators.

- Imported ImageCast ballot counters.

- Imported scanned ballot images from the ImageCast Evolution, and Central ballot counters.

- Imported XSLT (XML Stylesheet Transformation Templates) used to define election result reports.

Results Tally & Reporting provides the following logical output interfaces:

- Result reports in XML, PDF, HTML or Excel format used by EMS human and electronic stake-holders The type of exported data depends on the XSLT transformations.

16.1.1 Essential and Non-Essential Services and Ports

To further secure election servers, place a self-adhesive, tape-style tamper evident seal over any unused USB, Ethernet, or other port on the server and client workstations for EMS and ImageCast installations.

16.1.2 Anti-Virus Protection

Dominion Voting requires the installation of Avast Professional antivirus protection for server computers. These virus and spyware prevention/detection packages must be present on all server and client machines of the Democracy Suite EMS environment. These virus prevention/detection packages must have heuristic virus checking activated, and should be only temporarily disabled when restoring, creating, or configuring an Election Project on a client workstation.

Any resident prevention/detection features must be active. The virus prevention /detection packages must be updated to the latest version of the application and virus/spyware definition databases every week. Such updates will have to be introduced via a mobile storage device, as no external access to the network is permitted. These virus/spyware prevention/detection packages must be automatically run at set times every 24 hours. The set times should be chosen to minimize operational impact (during the night). Scans must be run on all attached storage devices and logs from these scans must be inspected and archived. If a virus' or spyware's binaries are detected, immediate action must be taken to isolate and remove it, in accordance with the virus prevention/detection package supplier's recommendations. This may simply involve quarantining and deleting the offending program, or in some circumstances a special removal tool may have to be used.

If virus/spyware infection is observed, additional measures must be taken including, but not limited to:

- Temporarily removing all machines from the network.

- Turning off System Restore and running both virus scanners.

- Formatting the hard drives of all infected machines and re-installing the operating environment from a clean installation source. Some malware overwrites the boot record of a computer is not removed, even with reformatting.

One day prior to Election Day, both virus prevention/detection packages must be manually run or the scheduled scan manually verified. On Election Day/Night, the automatic running of the virus prevention/detection packages must be suspended to ensure that there is no potential conflict or performance impact while results are processing. If necessary, run a manual scan so that within 24 hours of the tally, it can be confirmed that the anti-virus software showed no infection on the computer during Election Day and Election Night operations.

Installation procedures are listed in *Dominion Voting Systems Democracy Suite In stallation Procedures* .

16.1.3 Procedures for Verifying, Checking, and Installing Essential Updates and Changes

Unless authorized or required by the Secretary of State, no software or operating system updates should be installed on a Democracy Suite installation. Installing updates of any kind will violate the certified configuration of the voting system. If an update is authorized by the California Secretary of State, Dominion Voting Systems will then provide specific instructions on how to successfully perform a software update that conforms to the certification requirements and regulations set forth by the State of California.

16.1.4 Audit Records for the Changes Showing What, When, Who, and Why

Windows event logs show the antivirus updates as they are installed.

16.1.5 Acceptance Testing After the Installation

Unless authorized or required by the Secretary of State, antivirus software updates are the only updates allowed to be performed on the voting system. The EMS server is operational during an antivirus software update. If the update fails, Avast! notifies the user. If further testing is desired, the operator can start the Election Event Designer client application and select a few benign functions as a high level test to ensure that the antivirus update caused no obvious issues with system performance.

16.2 Administrative Control of the Backup and Restore of an Election Project

16.2.1 Backup of Election Project

To do a backup of an election project, do the following:

1. Open the EMS EED application by double-clicking on the EMS EED application shortcut on the desktop. Select 'Election Project' and click on 'Open Project'. In the 'Open Project' select the project form the list and click **OK**.

2. Log into the project by entering Administrator user name and password.

3. Once the election project is open in the EMS EED application, click 'Election Project' and select 'Create Backup' option from the drop down menu.

4. The dialog window will open where you will choose the the full back up (which is the second option in the dialog) and click on the **Continue** button.

5. Once the procedure is complete, the Information dialog window will appear notifying that the back up was successfully done.

6. The project package will be saved at the following location on the NAS:
D:\NAS\[NAME OF ELECTION PROJECT]\Project Package
Copy the Project backup ZIP file to the safe location.

A project package backup can also be created during the Restore database process, if the project being restored already exists on the EMS NAS:

- To do a backup of an Election Project, after selecting the Project Package in the Restore dialog window, and it loads (this may take some time) you will be able to see information concerning the package contents displayed in the dialog window.

> ⊘ If the election project does not exist on the EMS server, you will be presented with the text that project does not exist on the EMS Database server. If you wish to continue, click "OK".

- On the next screen the "Warning" dialog will appear.

- To create a backup file from this point, select the "Create Election Project Package File" checkbox.

- Click "Browse" and navigate to the location on the server where you want to save the election project package. Put the backup into a folder with a descriptive, recognizable name.

- Once complete, select the "Create" option to create the election project package file.

- When the process has successfully completed, click "OK" to proceed.

- Click on the "OK" button to continue.

- To initiate the restore process, click the "Restore" button.

- After the restore process has successfully completed, click "OK".

A minimum of four complete project package backups should be made during a typical election cycle:

1. Initial - the project package as supplied by the Dominion service bureau or produced by the jurisdiction. The election project has been fully completed, and is in the "Ready for Elections" state.

2. Logic & Accuracy test results - a backup of the election project after the L & A test has been successfully completed. This backup contains all of the scanned results, images, and logs of the L & A test as well as any of the pre-defined results reports that were produced.

3. Semi-Official canvass (Election night) results - a backup of the election project at the end of Election night tabulation and reporting has been successfully completed. This backup contains all of the scanned results, images, reports and logs of the Semi-Official results reporting.

4. Official canvass (Final) results - a backup of the election project at the end of the canvass period with all ballots tabulated. This backup contains all of the scanned results, images, reports and logs for the entire election.

16.2.2 Restore of Election Project

To restore an EMS database:

1. Expand the **Administration** menu and click on the **Restore EMS Database** sub-option.

2. *Restore Election Project Package* screen appears.

3. There are two options of restoring project: **Local Path on the Server** and **Local Path on the Client** .

4. In order to speed up the process of restoring a project package on the 'Standard configuration of EMS', the user must first copy/save the project package in the **D:\TEMP** folder on Application Server as defined in the 'Application Server Manager'. The user should select the **Local path on the Server** option and click **Browse**.

5. Server browser dialog will appear and will show the content of **D:\TEMP** folder.

6. Select project package you want to restore and click on the **OK** button.

> ⊘ *It is possible to restore a project package on Standard Configuration of EMS saved locally on the client, but this process will last much longer and may not run optimally.*

Following the steps below:

If we work on 'Express Configuration of EMS', use 'Local path on Client' option and browse for the project file anywhere on the computer.
After you select the package file, you will be able to see such package content as the project's name, date, creation date, and election event type.

> ✅ *If the election project does not exist on the target EMS installation, you will be presented with the text that project does not exist on the EMS Database server. If you wish to continue, click 'OK'.*

7. On the next screen the *Warning* screen appears.

8. To create a backup file from this point, select the **Create Election Project Package File** checkbox.

9. Click **Browse** and navigate to the location on the local drive where you want to save the election project package.

10. Once complete, select the **Create** option to create the election project package file.

11. When the process has successfully completed, click **OK** to proceed with the next election project restore process.

12. You can skip the creation of the election project package file. In this case, the newly restored file will overwrite the old one.

13. Click on the **OK** to continue.

14. To initiate the restore process, click the **Restore** button.

15. After the restore process has successfully completed, click **OK**.

16. Open the election project.

NOTE : *If you restore your election project package on an EMS workstation with a hard drive sector size that differs from the workstation that the project was created on, you will receive an Operation Cancellation error if you attempt to create a backup of your project.* In order to circumvent this error, delete the old backup file (. bak) from the \NAS\<PROJECT NAME>\DB\Backup folder.

16.2.3 Configure Network Parameters

1. If this is the first time opening EMS EED application, you need to set the network parameters. These parameters can be changed later on. Expand the **Administration** menu and click the **EMS Application Server Settings** option.

2. The **Network Settings** dialog appears. Type "EMSServer" in the **IP Address or Name of the EMS Application Server host** .

3. Type "emsapplicationserver" in the **EMS Application Server Name** field.

4. Press **Test** to confirm the correct settings have been entered.

5. Once confirmed, click **OK**.

6. If the connection fails, check the entered parameters. If the connection continues to fail, check if EMS Application server host is online and contact our technical support.

16.2.4 Setting up Project for Additional Audio Languages

If the Election Project is intended to support audio for languages other then those automatically provided for by EMS system, the audio folders for such languages need to be created manually on the EMS server by the Administrator. On the EMS server, navigate to **D:\NAS\Common\Audio** folder. Once inside the Audio folder, right-click and select to create New Folder. Name the language folder with the name that exactly matches (case sensitive) name used to define that same language in the EMS EED application, when creating languages. This folder should contain audio files for all static files in that language. Repeat the process until all desired languages have been added.

16.2.5 Creation of RTR User in Election Event Designer

In order to open an election project in Results Tally & Reporting, you need to create and activate an RTR user.

1. Open your election project in Election Event Designer. Expand the **Administration** menu and click the **Application Users** menu item. The **Administration - Application User** screen opens. Click **Search** to list all available users. Next, perform the following:

2. In the **Application** drop down menu, select **EMS RTR**.

3. Click **Create New**. The **Application User** dialog appears. Enter the following information:
   Enter an appropriate username.
   From the **Role** drop down menu, select the **RTR Administrator** role.
   Select **Manually create password**. Enter a case sensitive password in the enabled fields.

> ⊘ *Default password type - Minimum length is 8 characters which must include at least one number and one letter from the alphabet.*
> *Strong password type - Minimum length should be 10 characters which must include at least one number, one special character and one letter from the alphabet.*
> *Weak password type - minimum six characters.*

Optional : Add the relevant contact information on the right side of the dialog.

1. Click **Save and Close** to close the dialog and return to the **Administration - Application User** screen.

2. Open the newly created RTR user.

3. Change **Status** from **Initial** to **Active**. Press **Save and Close** again.

16.2.6 Initializing Reporting Services

On the EMS Server machine:

1. Open the EMS Application Server Manager by clicking **Start**, **All Programs**, **DVS**, **Application Server Manager** , and choosing **Application Server Manager**.

2. Click **Yes** to accept the UAC prompt and continue.

3. On the **Database Settings** tab, click **Test** to verify that the connection to the database was correctly established.

4. Click the **Reporting Service Settings** tab.

5. Click **Initialize Service** and wait for the "SQL Reporting Service initialized!" message in the bottom text box.

6. Press **Test** and wait for the "Connection successful! Folder 'EMSApplicationServerReports' already exists!" message.

7. Click **Save Settings** and then **Close**.

16.3 Disabling and Enabling Adjudication in EMS RTR

1. Expand the **Settings** menu and click on the **Project Properties** menu item. The **Project Settings** dialog appears. The following parameters can be configured:

2. Uncheck the **Enable Adjudication** option. Unchecking this item will ensure that the Adjudication process is not included in the workflow when managing result files.

3. Click **Apply** and then **OK** to close.

16.4 Preparing ImageCast Central Election Files for the ImageCast Central Workstation

The following procedure will create a master set of folders containing copies of the ImageCast Central application and election files for each ICC tabulator in the election project. After preparing the folders, **one copy** of this master set will be created and used for L & A testing. A **second copy** will be created for scanning official ballots. Once L & A testing has been completed, all folders will be backed up and archived and then a new copy of the election files will be deployed on ICC workstations for election day.

> ⊘ If the election project has been prepared by the Dominion Voting Systems Service Bureau, the prepared ImageCast Central election files will be provided along with the election project. The only step that must be performed is to copy the files to the ImageCast Central workstations.
>
> The prepared ImageCast Central election files should be evenly distributed across the num ber of available ImageCast Central workstations. The Administrator should then copy the ranges of ImageCast Central folders to destination workstations according to the predetermined schema, while keeping a detailed record of which files were copied to which workstation.
>
> This procedure assumes that all ImageCast Central tabulators have been created with an "ICC" prefix in their name.
>
> The election files can be burned onto the CF card via EMS EED application as described in Section Programming of CF Cards. Alternatively, the Administrator can use an USB stick to copy all or multiple ICC election files (i. e. more than one tabulator) from the EMS server and transfer to ICC workstations. Below, is the procedure for the later option.

1. Insert an empty USB stick, with enough space to hold all of the ICC election files, into the USB port of the EMS server.

2. Navigate to "D:\NAS\'Project Name'\Tabulator" folder.

3. Type "ICC" into the Search field located at the top right corner of the browse window. After the search is complete, only the ICC tabulator folders will be listed.

4. Select all ICC tabulator folders and copy them to the USB stick.

5. Once the copy process is complete, safely eject the USB stick from the EMS server.

6. Insert the USB stick into the USB port of the ICC workstation.

7. In the root of the C: drive, create a new folder and name it "ICC Election Files".

8. Open the contents of the USB stick in Windows Explorer and copy all contents into the newly created "ICC Election Files" folder on the C: drive.

9. Under "C:\ICC Election Files", open each ImageCast Central tabulator folder and perform the following steps:
   • Create a folder called 'project' and inside of it, create folder named 'config'.
   • Move "dcf " and "election" folders into the "\Project\config" folder for each ICC tabulator inside ICC Election Files folder.
   The **Election** directory contains Voting Information Files (VIF) which describe the Election, Ballots, Contests, and Candidates of the particular election. The **DCF** directory contains Device Configuration Files (DCFs) which define nuances in the way the particular ICC tabulator processes and reports the ballots scanned. respectively.

1. After repeating the same for each ICC tabulator folder, the Administrator will have a complete set of DVS folders with election files prepared for the ImageCast Central in the "C:\ICC Election Files" folder.

> ⚠ **Create a master copy of this folder containing the election files by copying it to a USB stick and storing it in a safe place. The administrator may wish to store multiple copies of the master set of prepared election files. This master copy will be used to setup ICC workstations prior to Election Day.** To illustrate - if you had three tabulators in your project named ICC Absentee 1, ICC Absentee 2 and ICC Election Day, then in the "C:\ICC Election Files", there would be the following folders and subfolders:
> **"ICC Absentee 1\Project\config"**
> **"ICC Absentee 2\Project\config"**
> **"ICC Election Day\Project\config"**

For more information about configuring individual folders, please refer to the *Democracy Suite ImageCast Central Installation and Configuration Procedure* , **9.1 Installing the ImageCast Central Application, 10.2 Installing Election Definition Files and 11.1 Securing Tabulator Folders** .

16.5 Managing ImageCast Central Tabulator Folders

When using ICC application to scan ballots, only one set of ImageCast Central tabulator election files is being used by the application. In order to set up the files for scanning:

1. Copy the content of "C:\ICC Election Files" into the "C:\DVS".

2. From the ICC application, set the local path to the desired tabulator's folder within the "C:\DVS".

Administrator will manage the files between Logic and Accuracy testing and live election, by restoring and backing up folders between "C:\DVS" and "C:\ ICC Election Files" as needed. For more detail, see Managing ImageCast Central Tabulator Folders.

16.5.1 Backup ImageCast Central Tabulator Folders

After Logic and Accuracy testing, the contents of the "C:\DVS" needs to be backed up and archived. This folder will be later used to restore the tabulator structure on the ICC workstation for live use (i.e.during an election) once Logic and Accuracy test has been completed and its results backed up.

16.5.2 Restore ImageCast Central Tabulator Folders

Ensure that the Logic and Accuracy results have been backed up, as described in Section Backup ImageCast Central Tabulator Folders. Restore the contents of the "C:\\ICC Election Files" that was backed up after the initial setup, as described in Section Preparing ImageCast Central Election Files for the ImageCast Central Workstation, by copying them into back into "C:\\DVS".

16.6 Adjudication Administration

16.6.1 Project Setup Wizard

The Adjudication Project Setup Wizard is the application's default state once it is installed. While in this state adjudication administrators can:

- Choose the election project to adjudicate.

- Configure adjudication options, such as ballot and contest filtering.

- Start adjudication on the selected election.

Note that regular, non-administrator users will not see the Setup Wizard. Instead, they are taken to the main adjudication screen, to wait for an administrator to start adjudication.

Choosing a New Election Project

The **Choose election project** menu lists all Election Event Designer projects that are available for adjudication.

To select a project to adjudicate:

1. Click the applicable project name.

2. Click Next.

3. The wizard will advance to the Security Key Setup page.
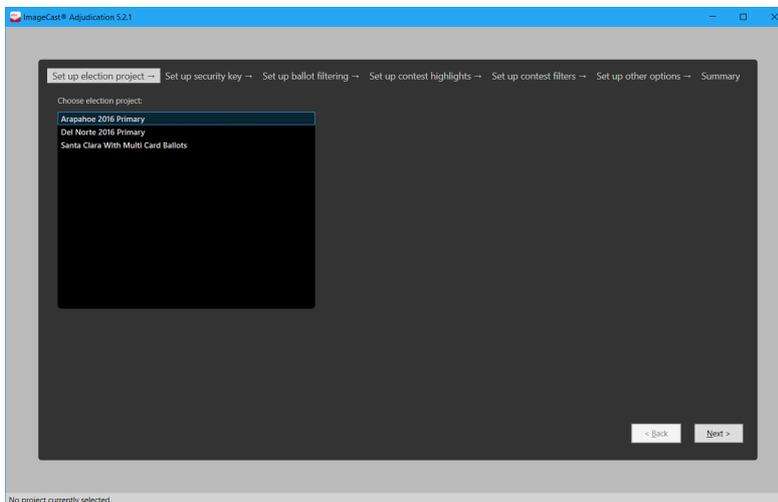
Project Selection

Choosing an Election Project with an Existing Session

An election project on which setup or adjudication was previously started is said to have an *existing adjudication session* created for it. The **Election Project screen** highlights these projects in green and allows resuming setup, or adjudication, on them.
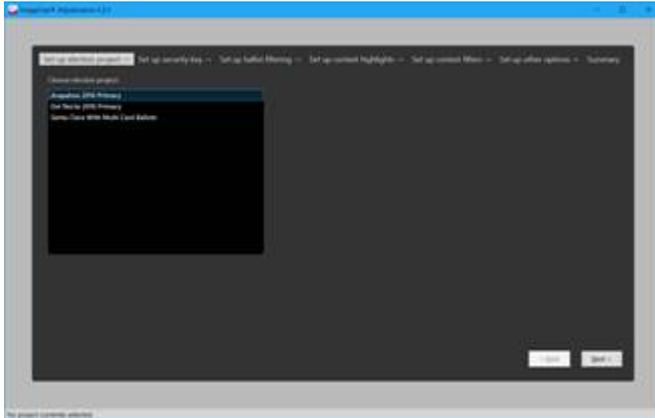
Existing Session Setup

If a project is highlighted because setup was previously started on it (that is, some setup steps were completed but adjudication was not started), and the user selects the project, the application simply allows the user to continue setting up.

If, on the other hand, the election is highlighted because adjudication was previously started on it, then the user is given the option to either resume adjudication for the project where it left off, or to start adjudication again from the beginning.
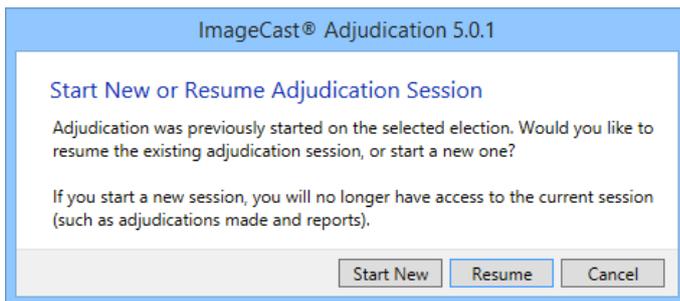
Start New or Resume Adjudication Session

- Choose Start New to start adjudication from the beginning.

- Choose Resume to resume adjudication for the election project.

If you select **Resume**, the wizard will skip to the **Summary** screen, and, instead of a **Start Adjudication**, there will be a **Resume Adjudication** button.

If you select **Start New**, then the wizard will advance to the first setup step, to begin setting up the project for adjudication from scratch.

⚠ Note that the existing session will be discarded, meaning that any adjudications made on batches not yet submitted, as well as configuration and reporting data will no longer be accessible.

Taking Control of Setup

Once an election project is selected by an administrator, that administrator is assigned exclusive control of the setup process (or, more accurately, of the adjudication session) for that election. This helps prevent multiple administrators from accidentally setting up an election at the same time.

If an administrator attempts to start setup on the same election as another administrator, the application will prevent them from doing so.
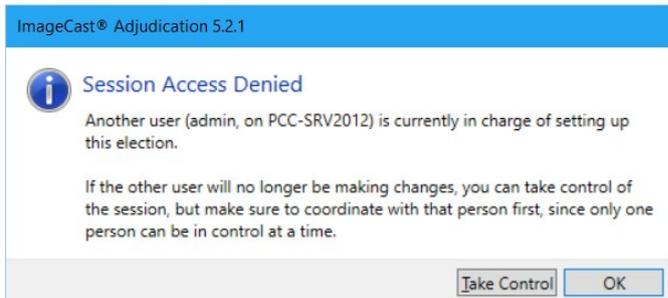
Session Setup Denied

In certain circumstances, other administrators may need to take control away from the original administrator in order to continue setup. This can be done by using the **Take Control** button shown in the same figure.

> ⚠ Taking control while the original administrator is still in the wizard trying to make changes will result in errors and prevent the original administrator from saving changes. Whenever possible, the original administrator should be aware that another administrator is taking control, and should exit the wizard beforehand.

Thus, to take control of a setup session:

1. Select the election project on which you want to take control and click **Next**.

2. When the *"Session Access Denied"* message appears, select **Take Control**.

3. On the confirmation message that appears, choose **Yes** to confirm that no other user will be making changes to the same session. The application will then let you enter setup.

Security Key Setup

The Security Key Setup screen allows the user to set up security key in the wizard. The user can use the currently installed key, create and install a new key or install key from an existing file. The following section describes the procedure for each of the options.

Create and Install a New Key

Choose this when starting adjudication on a new election, when the current key is no longer trusted or valid, or when in doubt. This new key will need to be installed on all clients.

To choose to create and install a new key:

Click **Install Key**.

Click **Yes** in User Account Control Icon. The **Security Key Installation** window appears.

In **Security Key Installation**, set up the Key File location by either clicking **Save As** or inputting the key file path. Also, set up the key password and confirm the password. Then click **Install**.
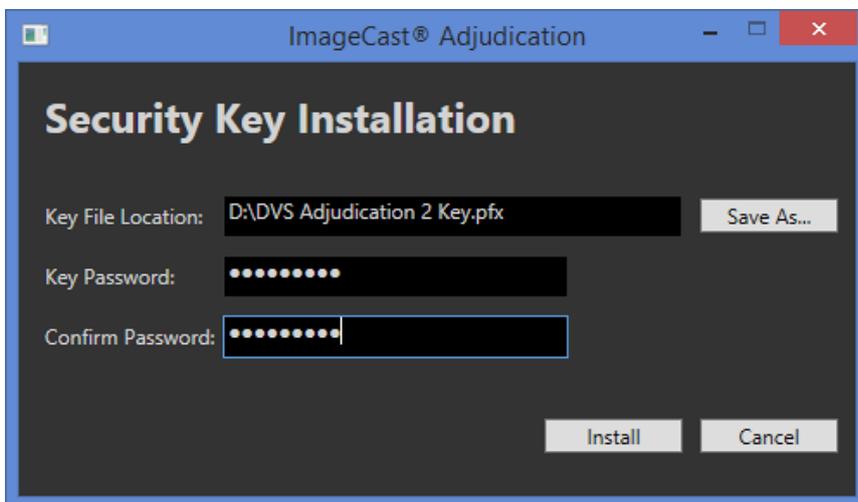
Create and Install a New Key

NOTE: While we advise that the security key file be saved to a USB key to be subsequently used to add the key to the remote client machines and then for safe keeping, if the key file is saved to a directory with limited permissions (such as C an additional file may be created with a .rnd extension that the system cannot clean up after the key is created. This additional .rnd file may be safely deleted by the user. Also, you will need to restart your computer to have access to the new key. The application will shut down automatically if you click **OK**.

A confirmation message stating "Key Installation Successful" appears. Click **OK**.

Key Insatallation Successful

Install Key from an Existing File

Choose this only if you have a recent key you trust (a key that has been kept safe from unauthorized access). This avoids reinstalling keys on clients that already have the existing key installed.
Click **Install Key**.
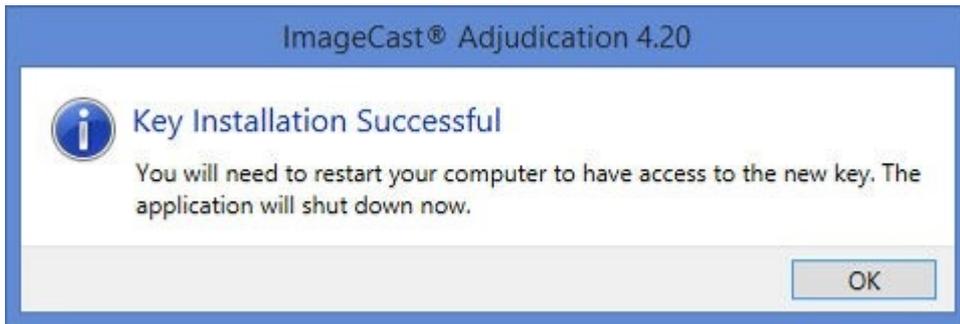Click **Yes** in User Account Control icon.
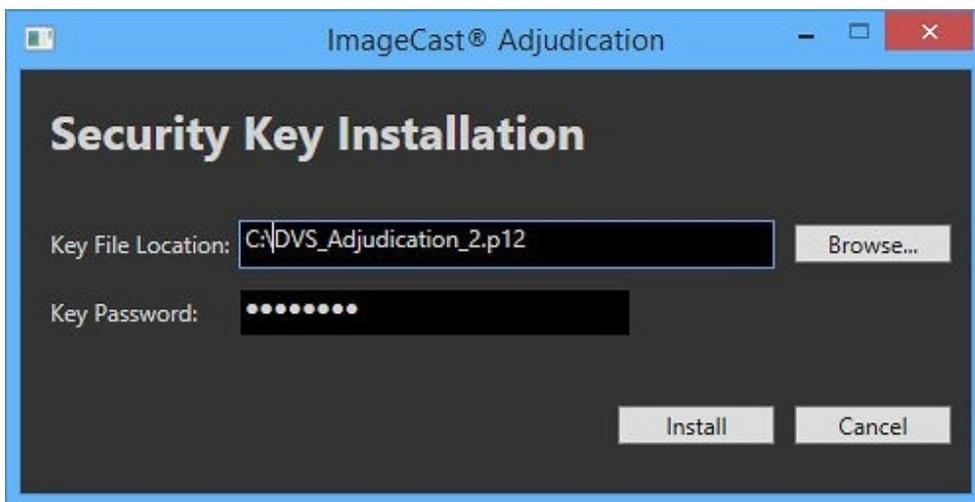
Key Installation Successful

In **Security Key Installation**, set up Key File location by either clicking **Browse** or inputting the key file path. Also, input the key password then click **Install**.
A confirmation message stating "Key Installation Successful" appears. Click **OK**.

Also, you will need to restart your computer to have access to the new key. The application will shut down automatically if you click **OK**.

Use the Currently Installed Key

Choose this if you recently created the installed key and you trust it (it has been kept safe from unauthorized access). For example, choose this if you have just created a key during installation, or when restarting adjudication on the same election. To choose to use the currently installed key, click **Next** to move to the next screen in the wizard.
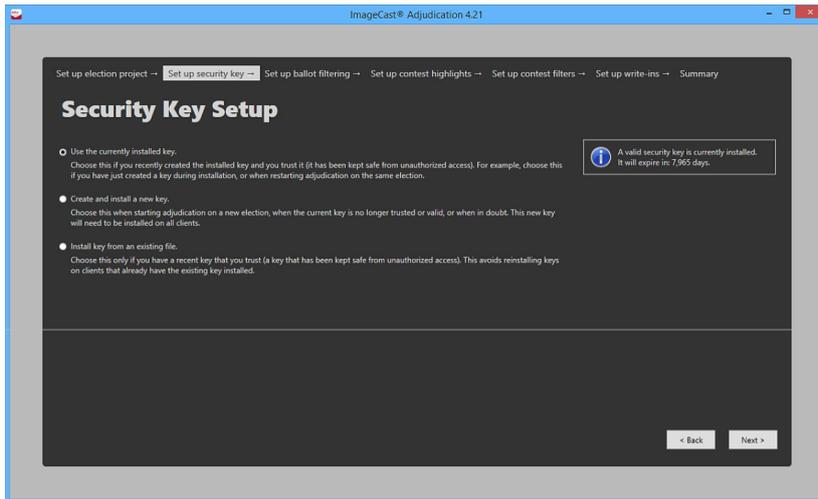
Security Key Setup

Security Key Validation

If you create and install a new key, or install a key from an existing file, and restart ImageCast Adjudication without restarting the machine, the following security key validation message appears "An invalid security key is installed and/or you are not authorized to use it."
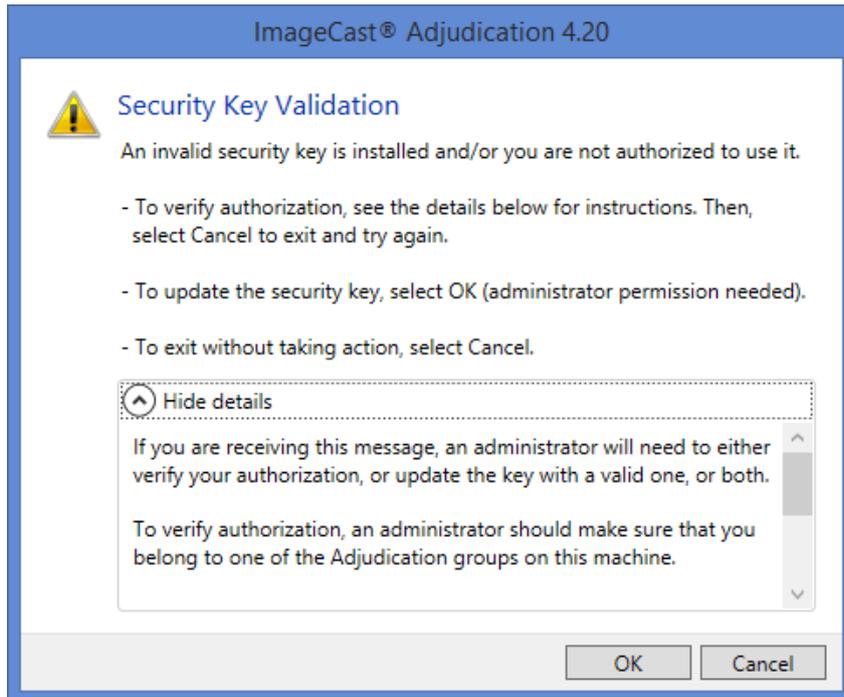
Security Key Validation

Perform one of the following:

- Verify authorization: To verify authorization, an administrator should make sure that you belong to one of the ImageCast Adjudication groups on this machine.Then click **Cancel** to exit and try again.

- Update the security key: To update the security key, click **OK** (administrator permission needed). Then security key set up screen appears. You can either create and install a new key or install key from an existing file.

- Exit without taking action: To exit without taking action, click **Cancel**.
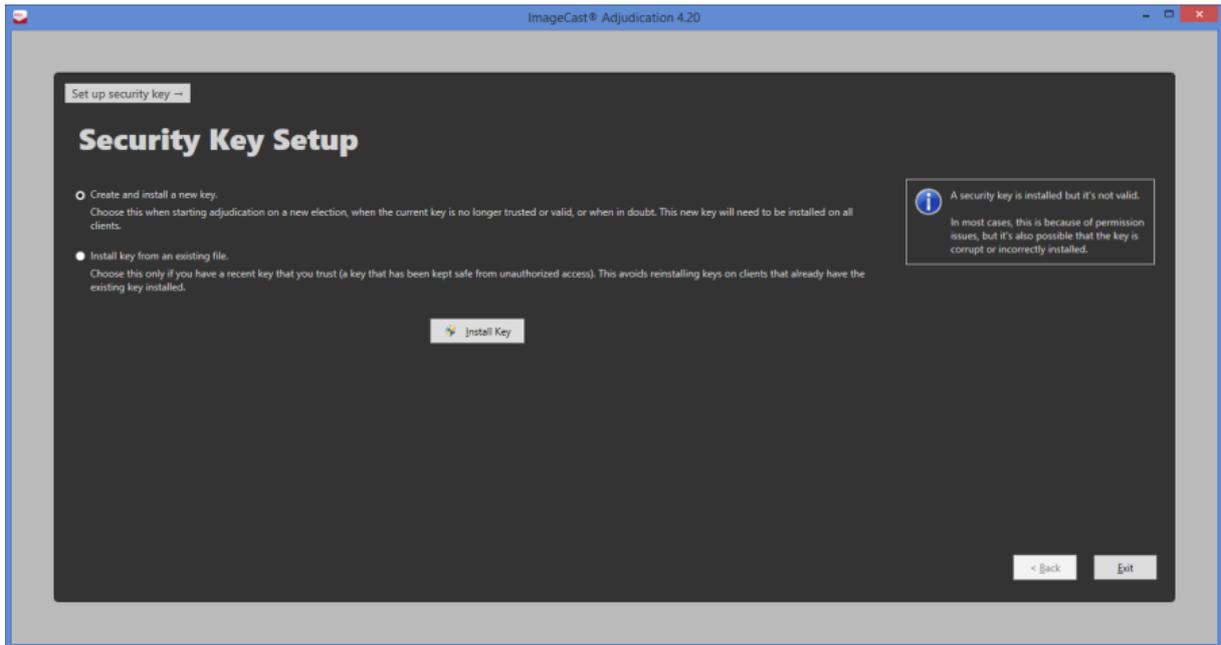
Update the security key

Ballot Filtering

The **Ballot Filtering** screen allows the user to select the outstack conditions to adjudicate. Out- stack conditions are used to filter ballots that must be served to users for adjudication. These filters assist in streamlining the workflow by reducing the amount of review required during ballot adjudication.

This step offers the option to **Adjudicate all ballots**. This option means that all ballots are available for adjudication whether or not outstack conditions exist on the ballots. When this option is selected, the next wizard step allows selecting which contests to highlight, to help users more easily determine problems on a ballot. When done making selections, select **Next** to move to the next screen in the wizard. Note that you must either select conditions or select the **Adjudicate all ballots** option before continuing.

The available outstack conditions will depend on the election configuration and contest types within the selected election project. For a description of the outstack conditions listed please see section Filtering Selections.
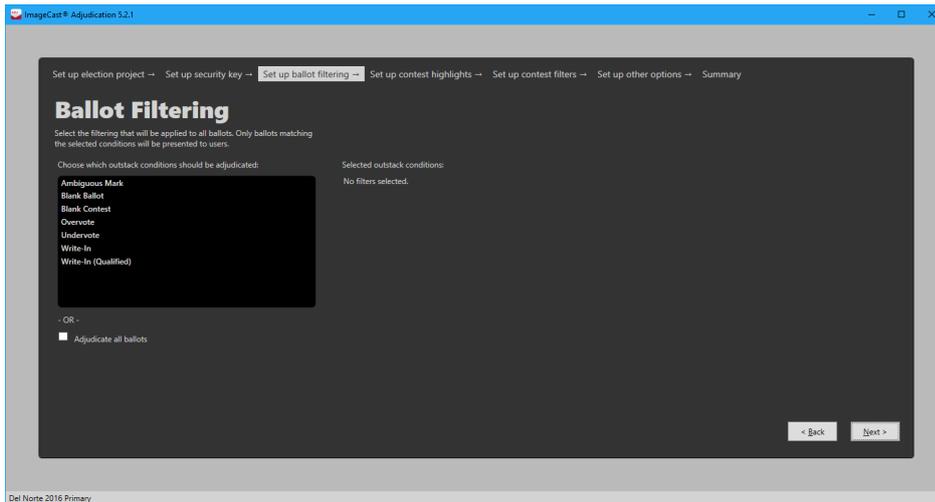
Adjudicate all ballots

To select outstack conditions:

1. Click the desired outstack conditions. The selections appear in the **Selected outstack conditions** list on the right of the **Ballot Filtering** screen.

2. Click **Next** to move to the next screen in the wizard.
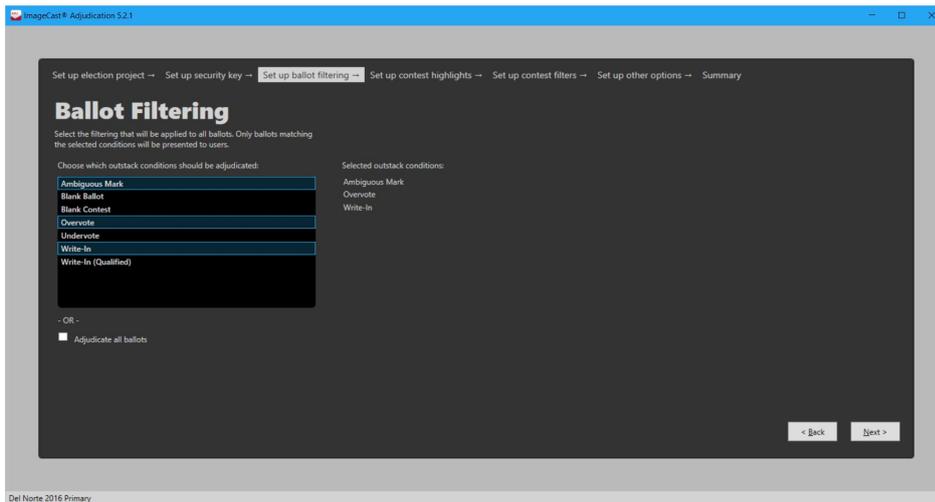
Select Outstack Conditions

Filtering Selections

Adjudication uses outstack conditions to virtually separate and categorize ballots based on pre-determined characteristics and criteria. For instance, if you wish to adjudicate write-in contests only, you may filter out all ballots without write-in contests to reduce the overall number of ballots to review.

The following describes the different outstack conditions that may be present on a ballot (note that a ballot may have multiple conditions at the same time):

- Outstack condition: **Overvote**

  A ballot contains one or more overvoted contests. This condition is applied at the contest level.

- Outstack condition: **Undervote**

  A ballot contains one or more undervoted contests. This condition is applied at the contest level.

- Outstack condition: **Write-in**

  A ballot contains one or more contests with write-in marks. This condition is applied at the contest level.

- Outstack condition: **Write-in (Qualified)**

  A ballot contains one or more contests with qualified write-ins and write-in marks. This condition is applied at the contest level.

- Outstack condition: **Blank ballot**

  A ballot contains no valid votes. A ballot containing one or more marginal marks may qualify for this condition. This condition is applied at the ballot level.

- Outstack condition: **Blank contest**

  A ballot contains one or more contests where no votes were detected. If a contest contains only marginal marks, this condition will exist. This condition is applied at the contest level.

- Outstack condition: **Marginal/Ambiguous mark**

  A ballot contains one or more choices that were detected as marginal marks. This condition is applied at the contest level.

The following outstack conditions may occur when a ranked-choice vote (RCV) contest is defined in the election project. Each is applied at the contest level.

- Outstack condition: **Duplicate ranking**

  A ballot contains an RCV contest where a candidate is marked in more than one ranking.

- Outstack condition: **Inconsistent ordering**

  A ballot contains an RCV contest where a candidate is ranked both above and below another candidate.

- Outstack condition: **Overvoted rank**

  A ballot contains an RCV contest where a ranking has been overvoted.

- Outstack condition: **Skipped ranking**

  A ballot contains an RCV contest where a ranking was skipped.

- Outstack condition: **Unvoted contest**

  A ballot contains an RCV contest that is not voted.

- Outstack condition: **Unused ranking**

  A ballot contains an RCV contest with an unused ranking at the end of the contest.

Additional outstack conditions may occur depending on the election project configuration and the types of contests defined in the election:

- Outstack condition: **Crossover**

  A cross-over rule violation was detected on the ballot. This occurs when the voter votes in mutually-exclusive contests, for example, voting in different partisan contests on an open primary ballot. This condition is applied at the ballot level.

- Outstack condition: **'No Preference' choice overridden**

  In jurisdictions that include a 'No Preference' choice this condition indicates that a vote for 'No Preference' was overridden because it would result in an overvote. This condition is applied at the contest level.

- Outstack condition: **Overridden by write-in**

  A vote for a regular candidate was overridden by a vote for a write-in candidate to prevent an overvote in jurisdictions where this rule applies. This condition is applied at the contest level.

- Outstack condition: **Party preference**

  A party preference rule violation was detected on the ballot. This occurs when the voter votes for one party in a party preference contest and then votes for a candidate in a different party. This condition is applied at the ballot level.

- Outstack condition: **Removed cross-endorsed mark**

  A ballot contains a contest where the voter voted twice for a candidate affiliated with multiple parties. Only the top mark is counted. This condition is applied at the contest level.

- Outstack condition: **Strict Inclusive overvote**

  A ballot contains a contest where an overvote occurred through the combination of explicit votes and implicit votes from a straight-party contest. This condition is applied at the contest level.

- Outstack condition: **Strict vote for**

  In jurisdictions with contests where the voter is required to vote for a particular number of candidates, this condition indicates a contest where the voter marked a number of candidates different than the contest "vote for". This condition is applied at the contest level.

Contest Highlighting

The **Contest Highlighting** screen allows users to select outstack conditions that will make a contest be outlined in red on the ballot, to help users find contests that need adjudication.

However, note that this option is only available when the option to **Adjudicate all ballots** is selected on the Ballot Filtering screen. Otherwise, this screen will simply list the conditions selected for filtering (if they apply to contests) and will not allow editing them, as the application will automatically highlight contests based on filtering conditions.

To change highlight options when the **Adjudicate all ballots** checkbox is selected in the **Ballot Filtering screen**:
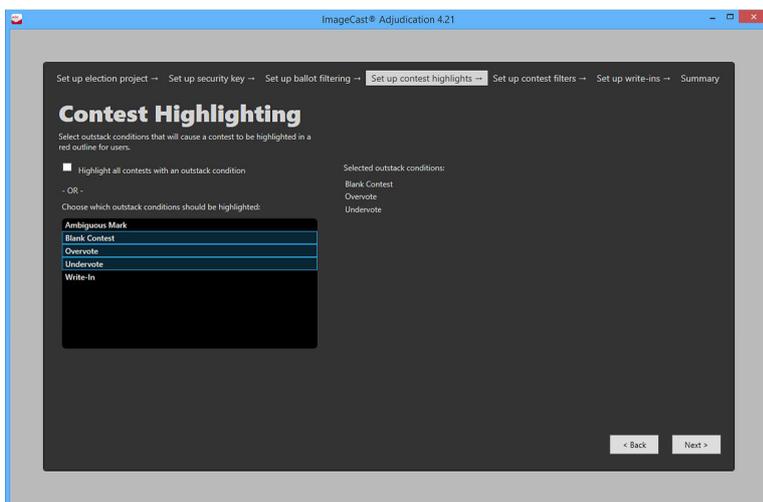
Contest Highlighting

1. Clear the **Highlight** all contests with an outstack condition.

2. Choose the outstack conditions you wish to highlight from the menu. The selections appear in the **Selected outstack conditions** list to the right.

3. Click **Next**.

Contest Filtering

The **Contest Filtering** screen allows users to select specific contests to be adjudicated. This option is specifically for recount situations where the focus is only on individual contests. Only ballots with the selected contest(s) will be shown in adjudication and only the selected contest(s) will be allowed to be adjudicated.

If the user chose to adjudicate all ballots in the **Ballot Filtering** step, all ballots that

contain the selected contest(s) will be available. If the user selected one or more outstack conditions in that step, only ballots where the selected contest(s) have the selected outstack conditions will be available for adjudication.

By default, all contests are selected to be adjudicated. To select specific contests:

1. Clear the **Adjudicate all contests** check box.

2. Select one or more contests. Selected contests appear in the **Selected contests** list on the right of the **Contest Filtering** screen.

3. Click **Next** to move to the next screen in the wizard

Re-selecting the **Adjudicate all contests** check box will again select all contests to be adjudicated.
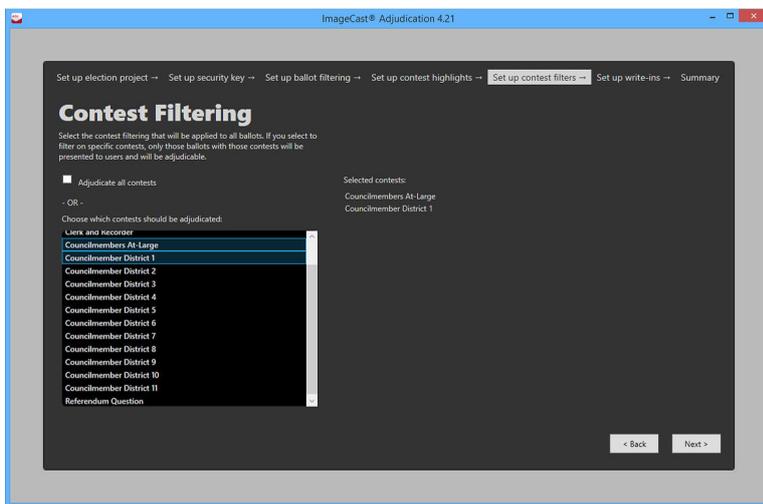
Select Contest Filters

Other Options

The **Other Options** screen allows users to select miscellaneous adjudication options. Selecting these options usually depends on specific jurisdiction requirements. The following describes the options on this screen:

- **Require Write-in Resolution**: Select this option to require adjudicators to resolve write-in contests to a qualified write-in, as opposed to allowing them to leave write-ins unresolved.

- **Write-in Resolution Not Required with Overvote**: This option allows an exception to the **Require Write-in Resolution** option, and does not apply unless both are selected. When checked, this option will not force adjudicators to resolve write-ins if the contest is overvoted.
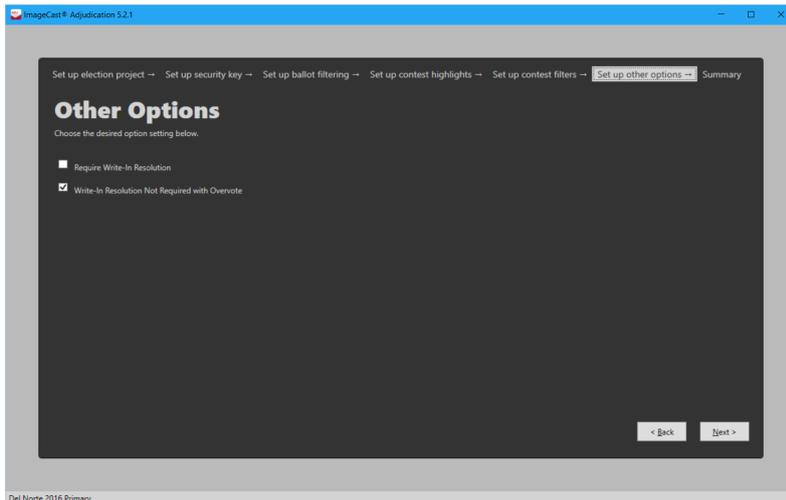
Other Options

To continue, select any desired options and click **Next**.

Summary Screen

The **Summary** screen allows you to review:

- Selected election project
- Ballots that will be shown
- Contest highlighting
- Contests to be adjudicated
- Other adjudication options

To change any of the items shown in the **Summary** screen, click **Back**. Once all items have been reviewed, the Administrator can click **Start Adjudication** to begin ballot adjudication. The application will advance to the main ballot adjudication screen once the *Adjudication Services* are ready to start processing for the selected election.

If an existing adjudication session was resumed in *the Election Project screen*, this screen will have a **Resume Adjudication** button, and the Administrator can press this button in order to resume adjudicating the election. As with starting adjudication, adjudication will continue once the *Adjudication Services* are ready to start processing.
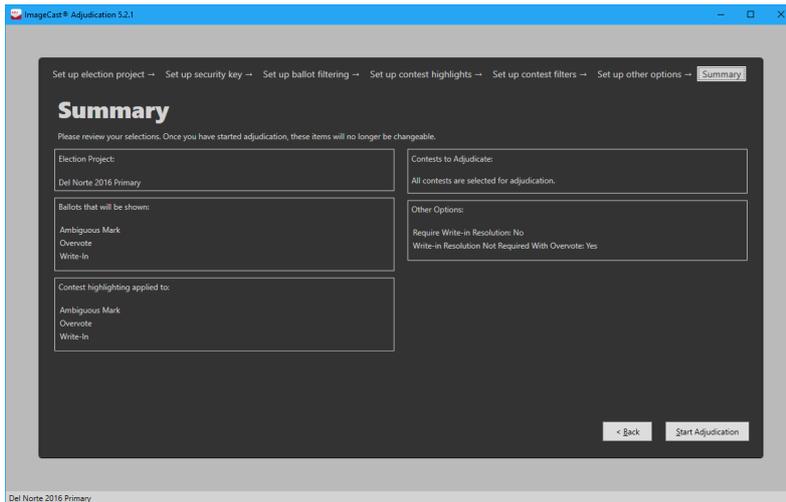
Summary of Project Selections

16.6.2 Administrator Roles

The Adjudication system distinguishes between general Adjudication Users, which can only adjudicate ballots, and Adjudication Administrators, which have access to the Project Setup Wizard, and to management operations, such as reporting, re-opening of ballots, and the ability to start and stop adjudication. This chapter will describe the administrative functions that are available after running through the setup wizard.

Administrative Screens

The following screens are accessible during adjudication to Adjudication Administrators:

- Batches
- Adjudicate
- Write-ins
- Reports
- Filtering

These screens are discussed in further detail below.

Batches

The Batches screen contains a list of ballot batches. Although the tabulator name is also visible, ballots are not organized hierarchically under tabulators but under batches. Batches are also the entity under which results may be accumulated, reported on, and submitted to RTR. The application attempts to serve all ballots within a batch before proceeding with another batch.
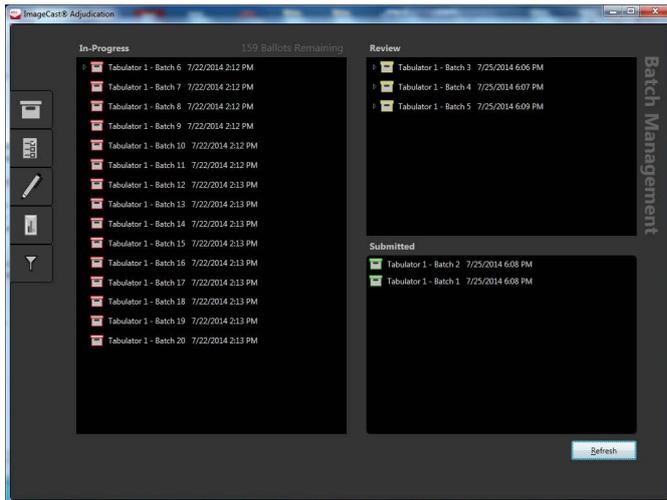
Batches Screen

Batches move through six states:

1. In-Progress

2. Read Error

3. Review

4. Pending Submission

5. Submitted

6. Submission Error

In-Progress batches are batches that have been acquired by the system and have ballots being served to clients. If errors occur while loading ballots for a batch into the system, the batch will be marked as being in **Read Error**.
When a batch is completed, that is, all its ballots have been adjudicated, its status changes to **Review**. Additionally, if ballot filters were setup in a way that causes no ballots in a batch to require adjudication, the batch will automatically move over to **Review** as well. A batch in review is available to be re-opened and adjudicated, and for reporting and submission for tallying.
After a batch is submitted, the batch status changes temporarily to **Pending Submission** while the system processes the submission. When the system confirms that a batch has been successfully sent to tally, its status changes to **Submitted**. However, if submission is unsuccessful, the status changes to **Submission Error**.
The *Batch Management screen* displays batches in three different panes. Batches that are in progress or could not be read due to an error are shown in the **In-Progress** pane. The **Review** pane shows batches that are completed or that could not be submitted due to an error, while the **Submitted** pane shows batches pending submission and batches successfully submitted.
Batches in the **In-Progress** and **Review** panes include a tree node that can be

expanded to show adjudicated ballots in the batch. When a batch is expanded, adjudicated ballots are displayed. The administrator can double-click on a ballot to review and re-adjudicate it (see section Re-opening Ballots).

Batch Status

In order to view batch status, the Adjudication Administrator has the ability to select a batch, which will highlight the batch, and show a notification bar at the top of the screen. This notification appears for a certain amount of time and shows how many ballots have been processed or are in progress for the batch.
At the top of the screen there is a **Ballots Remaining** counter. This counter displays how many ballots are left to adjudicate based on the filtering options selected and batches loaded. This number will update as batches are loaded and ballots are adjudicated. The **Refresh** button in the lower right corner can be utilized to ensure that the current batch status and **Ballots Remaining** counter is current.
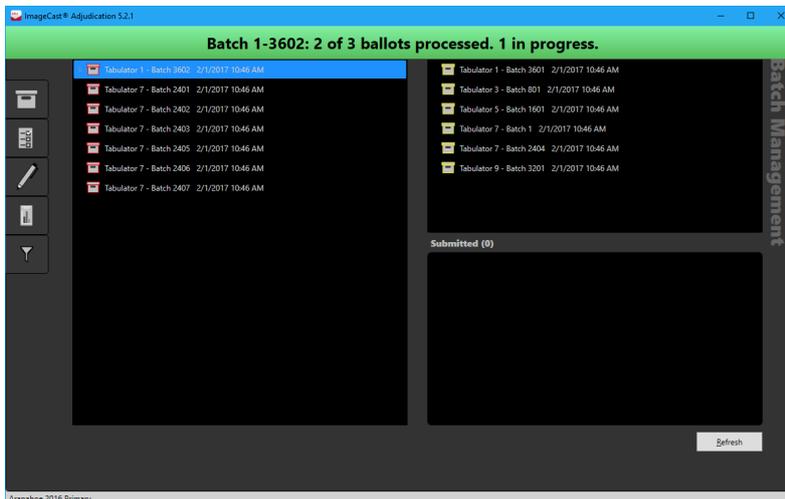
Batch Status

Re-opening Ballots

Batches in the **In-Progress** and **Review** panes include a tree node that can be expanded to show adjudicated ballots in the batch. The administrator can double-click on a ballot, to review an adjudicated ballot.
When this is done, the ballot is displayed in the *Ballot Viewer screen*, and the administrator can readjudicate it if desired. If another ballot was already displayed in the viewer, the administrator has the option to save changes for the current ballot, discard changes, or cancel to keep the current ballot and cancel the reopened ballot. When finished with a reopened ballot, the administrator has the option to save the reopened ballot, or to close it without saving. In the latter case, the administrator has just viewed the ballot, and nothing has changed.
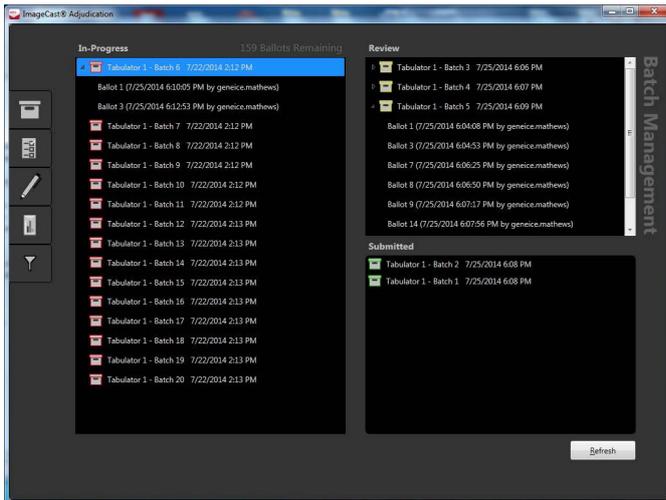
Batch Management Tree View

To reopen a ballot for review or for readjudication:

> ⚠ Let other administrators know when you are reopening ballots from the Review pane. This is to ensure that other administrators do not submit the batch while you're working on it.

1. In the **In-Progress** pane or the **Review** pane, select the arrow to the left of the batch.

2. Double-click the ballot that requires review or readjudication.

3. Review or readjudicate the ballot.

4. When done, click the **Revert** button to discard any changes made, or the **Overwrite** button to save changes, essentially re-adjudicating the ballot.

5. On the confirmation message that appears, click **OK** to confirm your choice.
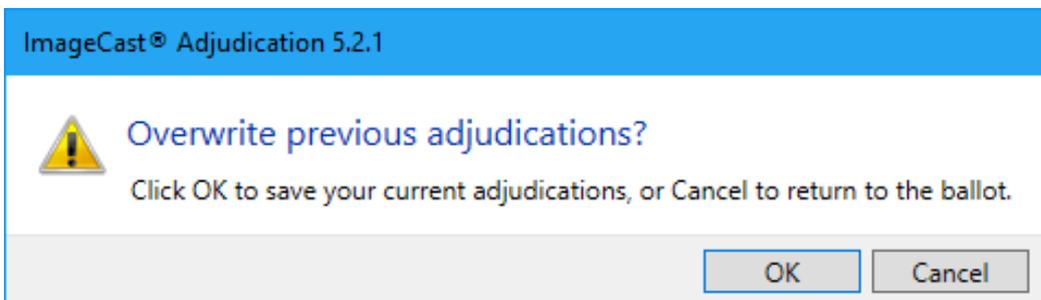
Confirmation message when readjudicating a ballot

Batch in Progress

In some instances, a batch may remain in the **In-Progress** state when it seems as if all ballots for the batch have been adjudicated. This indicates that one or more ballots within the batch have not been served.

To ensure all ballots in a batch are served to adjudicators:

1. Confirm that the ballot is not open in any clients, including administrator clients (it's easy to miss an open ballot if the client is on an administrative screen such as Batch Management).

2. In the **In-Progress** pane, highlight the batch that has not processed.

3. Right-click the batch and select **Reset in-progress ballots**.
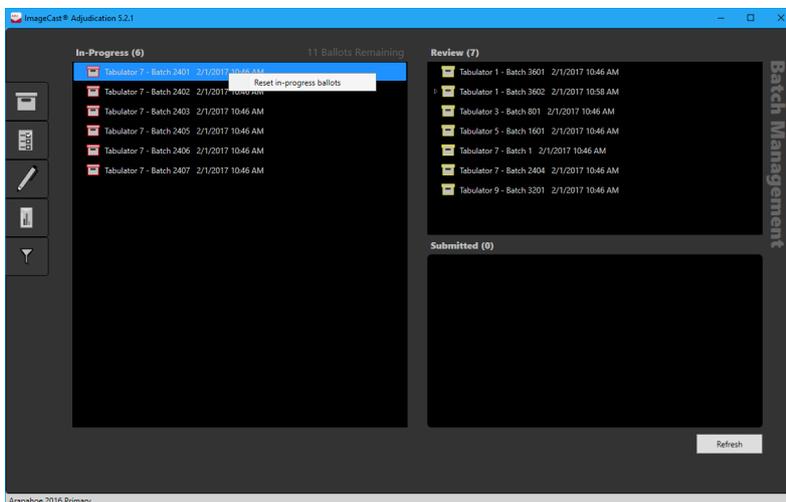
Resetting In-Progress Ballots

Submit a Batch to Results Tally & Reporting (RTR)

Adjudication Administrators can submit batches for tallying once they are completed and appear in the Review pane.

> ⚠ Before submitting batches, make sure other administrators know about, and agree on, the batches to submit. This ensures that no other administrators attempt to submit the same batches at the same time, preventing errors.

Additionally, you should make sure that no ballots from the batches to be submitted are being reviewed. Any work on ballots being reviewed will be lost if the batch they belong to is submitted before the ballot is saved (a warning will be logged by the services whenever this occurs).

To submit a batch to RTR:

1. In the **Review** pane, select one or more batches. You can use the Shift and Ctrl keys as you click to select multiple batches. Additionally, you can use Ctrl-A to select all batches.

2. Drag the selected batches to the **Submitted** pane.

3. The batches will appear as pending until the system confirms that they have been successfully submitted. Once this is done, cast vote records for all adjudicated ballots in the submitted batches will be updated and will appear as synchronized in RTR.

If an error occurs while the system processes a submitted batch, the batch will **move back** to the **Review** pane with an error status. In addition, there are circumstances where a batch may remain in the pending state indefinitely (in the **Submitted** pane). In such cases, an administrator should check for errors on the server. After doing that and resolving any issues, batches may be resubmitted, as follows.

To resubmit a batch that is pending:

1. Make sure to Refresh beforehand to ensure the correct status is being shown for the batch.

2. In the Submitted pane, select the affected batch.

3. Right-click the batch and select Resubmit.

To resubmit a batch that has a submission error:

1. In the Review pane, select the affected batches.

2. Drag the selected batches to the Submitted pane.

Adjudicate

All clients will receive a set of ballots to adjudicate based on the filtering options set by the administrator during project setup. Ballots are automatically served to each client, including Adjudication Administrators (although they have the option to stop receiving ballots). To review the adjudication process, please see section Adjudication Process.

Write-ins

Adjudication Administrators can view the list of write-in contests in the **Write-in** screen.

⚠

> Please note that in previous versions this screen used to show qualified write-in choices entered for the listed contests, but qualified write-ins are no longer managed in Adjudication; this is now done in Election Event Designer instead.
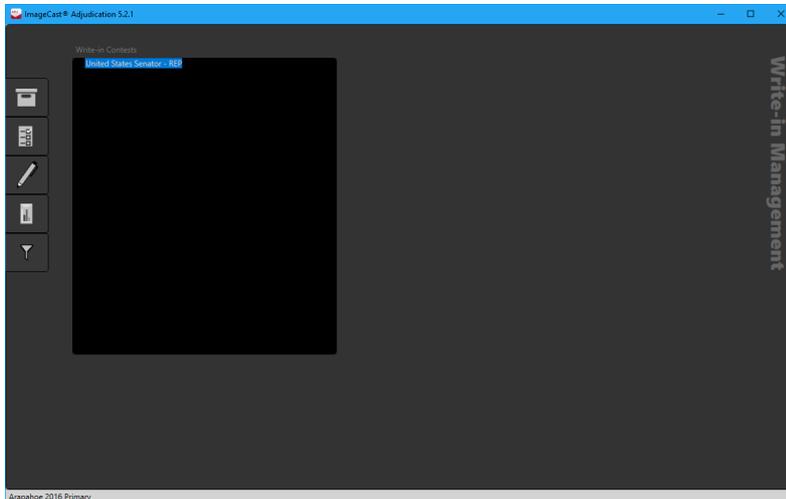
Write-In Screen

Adjudication Reports

There are four types of reports that Adjudication Administrators can generate:

1. Summary
2. Activity Log
3. Write-in Resolution
4. Statistics

The Summary Report is only available for batches submitted to RTR. The other reports are available for either completed or submitted batches. When a ballot in a completed batch is readjudicated, reporting data is regenerated for the batch. While this is taking place, reports for the batch are temporarily unavailable. If a report is displayed on the screen that includes data for a batch that is being regenerated, the user is notified that the data in the report may be out of date.

The election project name is defaulted into the **Election Name** field but may be changed by the user. Additionally, a user may enter their own title for the report. Reports may be generated as PDFs, Excel files, or generic CSV files. Excel and CSV formats allow users to import the results into other systems. The Reporting view contains a report viewer control that displays the report in a paged format and allows the user to zoom in or out.

The **Stop Adjudication** button is located on this screen. Stopping adjudication is the final step in the adjudication process for an election, see section Stopping Adjudication.
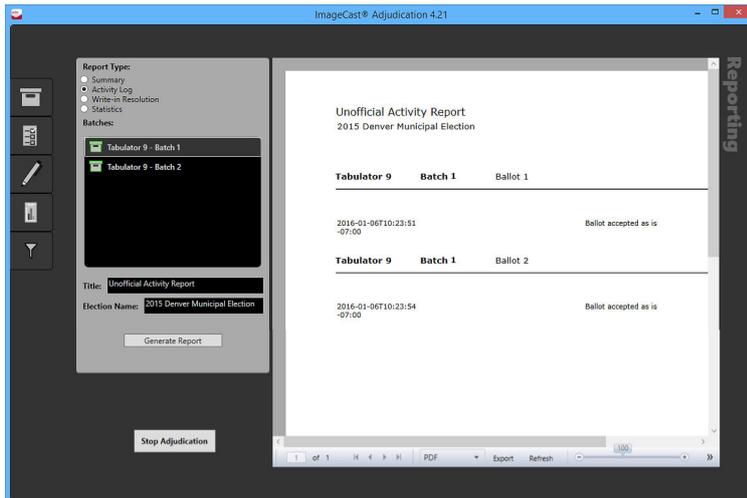
Reports Screen

Digitally Signed PDF Reports

In the Reports screen, when the user chooses to export in the PDF format, the application adds a digital signature to the file. The digital signature ensures that the report originated from the DVS Adjudication application and has not been altered in any way after being exported.

The application signs the document using the same key that is installed during the Project Setup Wizard. Note that the key is associated to a digital certificate that identifies the Adjudication system as the owner of the key. This key and certificate are trusted by Windows on Adjudication machines because they're installed by the administrator when setting up the election.

However, Adobe products, such as Adobe Reader or Acrobat, do not determine whether a certificate is trusted in the same way that Windows does (this is because they have their own "certificate store").

Thus, when using Adobe products to view signed Adjudication reports for the first time on a machine, the user will need to manually trust the certificate in order to avoid a warning about the validity of the document signature. To do this:

1. Expand the certificate in the **Signature Panel** in Adobe.

2. Expand **Signature Details** and select **Certificate Details**. The **Certificate Viewer** window will appear.

3. Click the **Trust** tab and highlight the root certificate in the left panel.

4. Click **Add to Trusted Certificates**. When the report is closed and reopened, Adobe verifies that the certificate is now trusted.
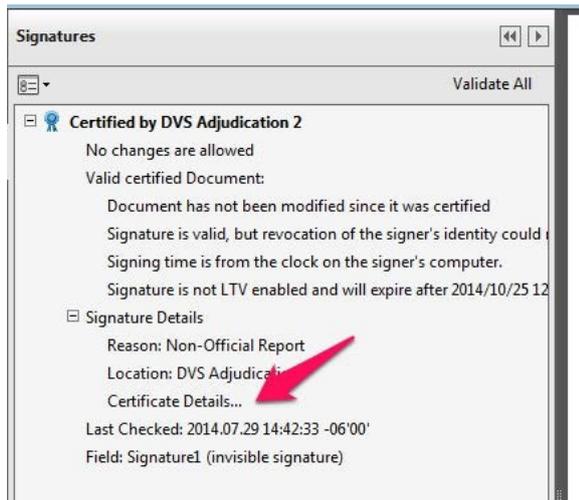
Signature view

The export process initially saves a version of the file that is unsigned, signs it, producing a second file, and then deletes the original file. The signed file is saved with a "signed.pdf " extension. For example, if the user chooses to save the file with the name SummaryReport, the exported file name will be SummaryReport.signed. pdf.

Note that in case the system cannot clean up the original, unsigned file (i.e., SummaryReport.pdf), the user will be informed and directed to manually remove the file.

Summary Report

Summary reports accumulate all adjudicated results by tabulator and batch and show summary totals by contest. Batches and ballots that were filtered in the adjudication project setup step will have their totals reflected here and contribute to overall turnout numbers. Summary reports may be generated for one or more batches.

To generate the summary report:

1. Select the **Summary** report type.

2. Select one or more batches that you want to view.

3. In the **Title**, field enter a title or nothing as needed.

4. In the **Election Name** field, enter or modify the election name.

5. Select **Generate Report**.
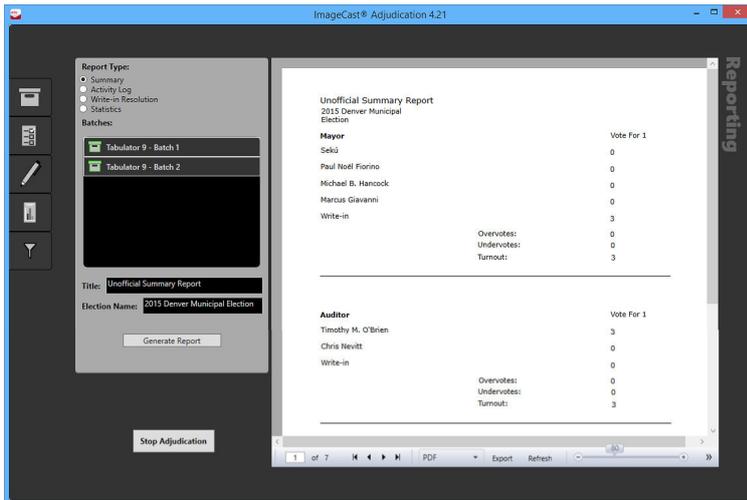
Summary Report

Activity Log Report

Activity reports show adjudication actions taken against each ballot and are grouped by tabulator and batch. Each action shows the user name of the logged-in adjudication user along with the date/time of the action. The following actions are listed: Mark added, mark removed, write-in accepted, write-in rejected (with reason). Ballots which were filtered out of adjudication are labeled appropriately in the report. To generate the activity report:

1. Select the **Activity Log** report type.

2. Select one or more batches that you want to view.

3. In the **Title** field, enter a title or nothing as needed.

4. In the **Election Name** field, enter or modify the election name.

5. Select **Generate Report**.
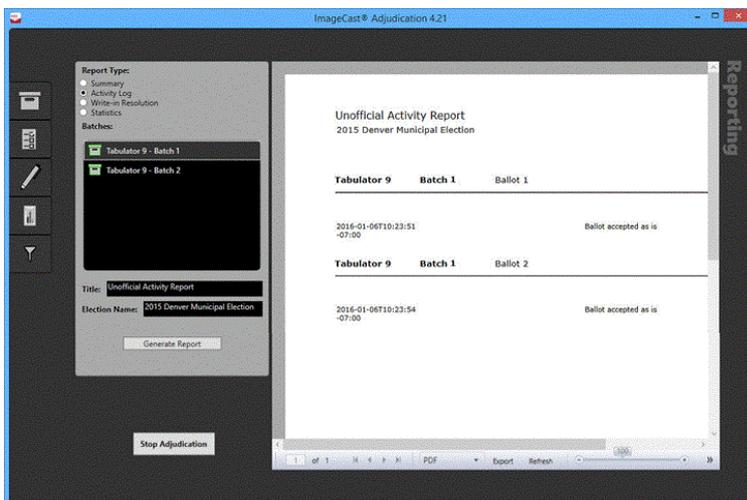
Activity Report

Write-in Resolution Report

The Write-In Resolution report shows a breakdown of adjudication actions made specifically to resolve write-in choices. The report breaks down the actions into the number of choices accepted as-is, the number of choices that were resolved to a qualified write-in candidate and what candidate they were resolved to, and the number of choices that were rejected and for what reason they were rejected.
To generate the write-in resolution report:

1. Select the **Write-in Resolution** report type.

2. Select one or more batches that you want to view.

3. In the **Title** field, enter a title or nothing as needed.

4. In the **Election Name** field, enter or modify the election name.

5. Select **Generate Report**.
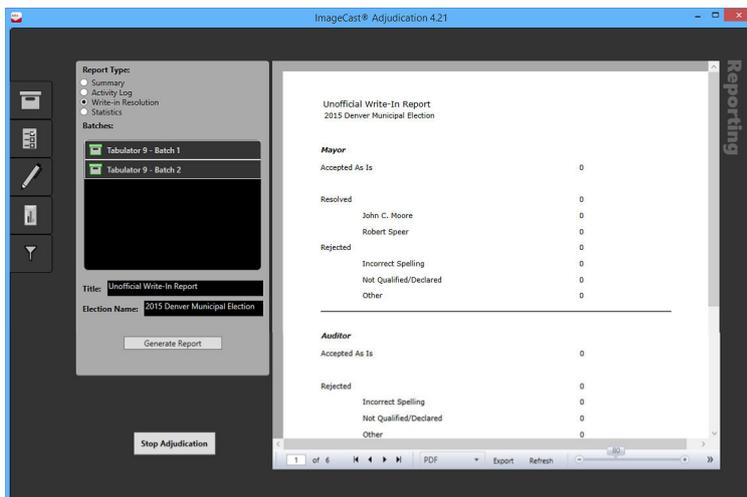
Writein Resolution Report

Statistics Report

The Statistics report shows a breakdown of the total number of ballots adjudicated compared to the total number of ballots in the selected batch or batches, as well as a breakdown of the number of ballots that were adjudicated per outstack condition. Because ballots may match more than one outstack condition, the condition totals may be more than the total number of ballots in the batch or batches.
The first, bolded section of the report shows the totals for all batches selected for the report. A batch- by-batch breakdown follows with totals for each respective batch.
To generate the statistics report:

1. Select the **Statistics** report type.

2. Select one or more batches that you want to view.

3. In the **Title** field, enter a title or nothing as needed.

4. In the **Election Name**: field, enter or modify the election name.

5. Select **Generate Report**.
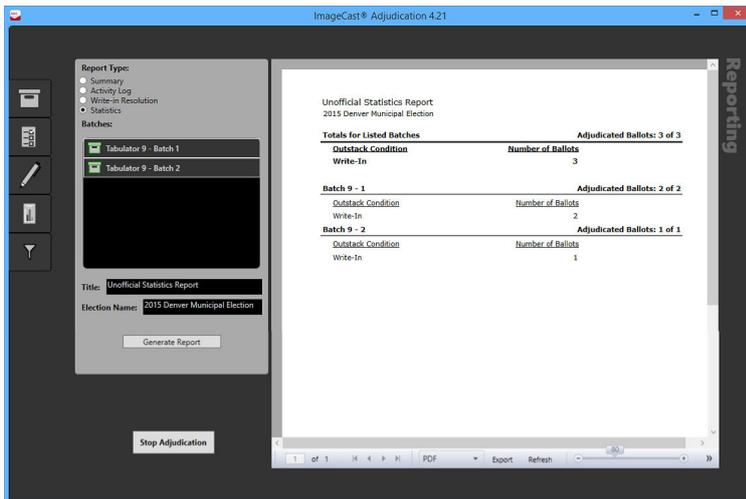
Statistics Report

Filtering

The Filtering screen shows the outstack conditions and contests that were selected during the Project Setup Wizard in order to filter the ballots to adjudicate. It also shows the conditions that cause contests to be highlighted on a ballot. See sections Ballot Filtering through Contest Filtering for more.
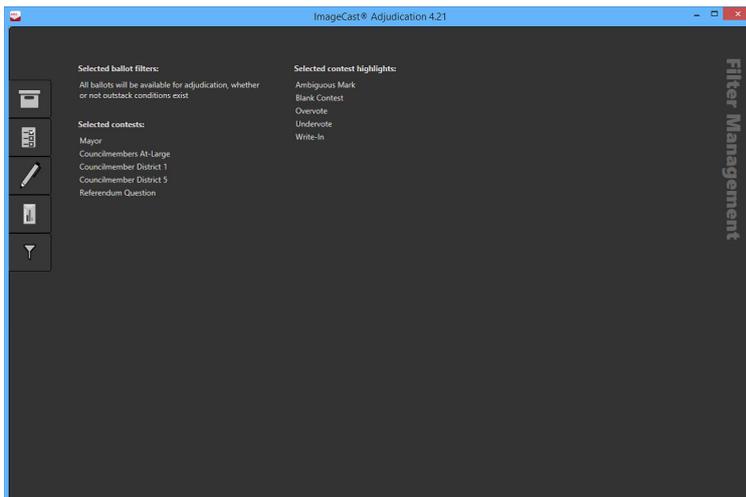
Filtering Screen

Starting ImageCast Adjudication

To start Adjudication the administrator clicks Start Adjudication in the Summary screen of the Project Setup Wizard. For more information see section Summary Screen.

Once adjudication is started, the Adjudication services request results from the Democracy Suite Election Management System (EMS), which are typically loaded through Results Tally and ReportingTM (RTR). The Adjudication services read cast vote records from tabulator batches and transfers them into the Adjudication system.

> ⊘ After starting adjudication the Administrator cannot make changes to what was selected in the setup wizard. If changes must be made adjudication needs to be stopped, which brings the administrator back to the setup wizard so they can setup the project again and start adjudication anew. Note that when doing this, any ballots that were adjudicated in the previous session will retain the appended audit mark.

Ballots will begin to be served to adjudicators soon after adjudication is started. If no ballots are served, use RTR to ensure that loaded batches are in an 'Initial' or 'Validated' state and check the DVS Adjudication and EMS System event logs for errors. For more information, see the Troubleshooting section in the Democracy Suite Adjudication System Operation Procedures document.

Stopping Adjudication

Stopping adjudication is the final step in the adjudication process for an election, as doing this instructs the system, especially the Adjudication services, to end processing so that another election can be set up for adjudication.

After stopping, no further actions are allowed, including reporting, unless the adjudication session is resumed (see more on this below). All administrators that have a client open will be taken back to the Project Setup Wizard. Any open clients will be notified that adjudication has stopped and, if they have remaining ballots open, the ballots will be removed and no changes will be saved.

It is possible to resume adjudication on a stopped session. This is useful for situations that require stopping adjudication temporarily, or where adjudication was stopped early by mistake. However, be aware that this is available only if setup has not been started anew on the election. For details on resuming adjudication, see section Choosing an Election Project with an Existing Session.

When adjudication is stopped, it may take a few minutes before adjudication can be started on a new project, or before an existing session can be resumed. It is recommended to wind down adjudication activities before stopping adjudication.

That is, stop batch loading in RTR and stop adjudicating ballots. Check the Batches screen to ensure that all batches shown in RTR have been loaded by Adjudication, and that batches report the expected counts of processed ballots. Finally, if you notice any problems, check the logs for ongoing errors and correct them.
To stop adjudication:

1. Open the **Reports** screen.

2. Press the **Stop Adjudication** button.

3. Confirm that you would like to end adjudication by pressing **Yes**. You will then be taken to the **Project Setup Wizard**.
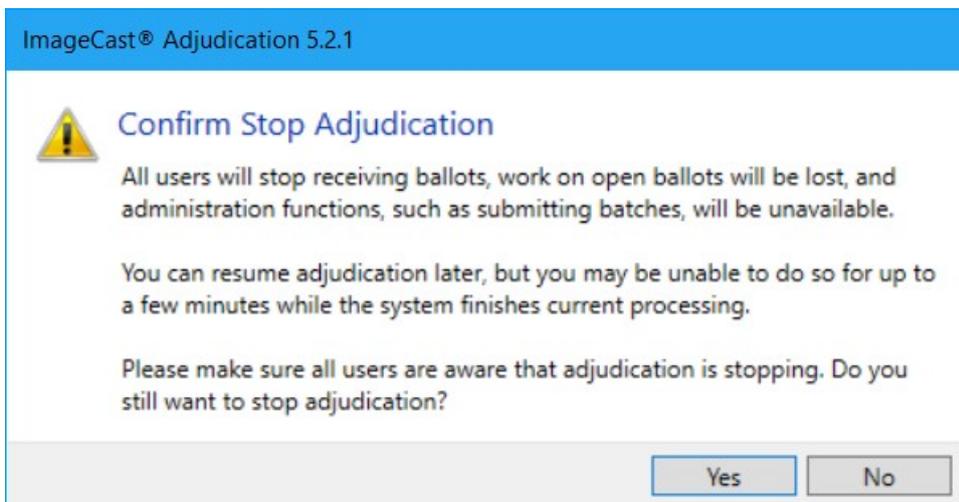
Stop Adjudication

Backing up and Restoring Adjudication

The adjudication application uses three SQL Server databases: the Election Store, a Tabulation Store, and an Adjudicable Ballot Store. The Tabulation and Adjudicable Ballot stores are specific to the election being processed, which means that a new database is created for those stores each time an election is set up for adjudication. The Tabulation store is named as follows:

```
TabulationStore_Election name_Date/time stamp
```

The Adjudicable Ballot store is named as follows:

```
AdjudicableBallotStore_Election name_Date/time stamp
```

To make a backup of the Adjudication application a backup must be made of the three databases. It is recommended that the backups of EED and RTR also be done, according to their respective User Guides.

Backing up the Adjudication Databases

1. As the Administrator, from the **Start** menu, open **SQL Server Management Studio**.

2. In the **Connect to Server** window, click **Connect**.

3. In the **Object Explorer** pane, click the **Databases** folder.

4. Right-click **ElectionStore** and click **Tasks** > **Backup.**

5. In the "Backup set" Name section enter additional details to the name as needed, change the backup destination as needed and click **OK**. A success message appears, click **OK** again.

6. Repeat the above instructions for the TabulationStore and the AdjudicableBallotStore databases.

7. Once complete, please exit out of the application.

Restoring Previously Archived Databases

1. From the **Start** menu, right-click **Computer** and click **Manage**. The **Computer Management** window appears.

2. Expand **Services and Applications** and click **Services**.

3. In the **Services** pane, scroll down to the services whose names start with DVS. The application has 10 services:

    a. DVS Adjudicable Ballot Service

    b. DVS Adjudication Data Service

    c. DVS Ballot Completion Service

    d. DVS Ballot Preparation Service

    e. DVS Batch Completion Service

    f. DVS Election Data Service

    g. DVS Election File Manager

    h. DVS Report Builder Service

    i. DVS Report Service

     j. DVS Statistics Service

4. Right-click each Service and click **Stop**.

5. Open **SQL Server Management Studio**.

6. In the **Connect to Server** window, click **Connect**.

7. In the **Object Explorer** pane, click the **Databases** folder.

8. Right-click **ElectionStore** and click **Delete**.

9. In the **Delete Object** window, click **Close** existing connections and click **OK**. You are returned to the **Object Explorer** pane.

10. Repeat this process for the TabulationStore and AdjudicableBallotStore databases.

11. After the process have been completed for all three databases, in **Object Explorer** pane, right- click the **Databases** folder and click **Restore Database.**

12. In the **Restore Database** window, click **From device** and browse to the backup location where ElectionStore.bak is found. Click **OK**.

13. In the **Restore Database** window, check **Restore** and in the **To database** field type in the name of the database being restored. **Right-click and copy the database name from the Device field to ensure the database name is correct. Click OK.**

14. Repeat this process for TabulationStore.bak.

15. To restore the AdjudicableBallotStore database ensure the **Restore Database** window is open. Click **From device** and browse to the Backup location where ElectionStore.bak is located. Click **OK**.

16. In the **Restore Database** window, check **Restore** and in the **To database** field, type in the name of the database being restored. **Right-click and copy the database name from the Device field to ensure the database name is correct.**

17. Click **Options** in the **Select** a page pane.

18. Check the entire **Restore As** field names and remove any colons, if existing, in AdjudicableBallotStore.mdf and AdjudicableBallotStore.LDF. Click **OK**.

Starting Adjudication Services

1. From the **Start** menu, right-click **Computer** and click **Manage**. The **Computer Management** window appears.

2. Display the **Services and Applications** menu and click **Services**.

3. In the **Services** pane, scroll down to the list of services stopped in the previous section.

4. Right-click each service and click **Start**.

16.7 Purging Election Results

16.7.1 Purging Election Results from RTR

The purpose of purging election results from RTR is to clear results from a previous election before starting a new election.

1. In the **Main Menu**, click on **Actions**, **Results** and then click on the **Purge Results** option. The *Confirm Purging* dialog window will open.

2. In the *Confirm Purging* window, enter the text sequence that appears on the screen and click on the **OK** button to confirm purging.

16.8 Security Procedures for Central Processing

The official environment of the central count location is under the control of the jurisdiction, which determines its own physical security requirements for their central count facility. The jurisdiction is also responsible for handling and storing ballots both before and after they have been scanned.

The following is a suggested high-level ballot handling procedure for central processing:

Ballot boxes are typically stored on racks until they have been scanned and should remain on these racks until this point. Before the scanning process, a ballot handler is assigned to a specific scanner and is responsible for retrieving boxes of ballots from the racks for this scanner.

Once the scanner count records are compared and matched to the poll record, and every total has been balanced, the ballots are ready to be re-boxed. A post-scanning ballot handler reclaims the scanned ballots from the scanning tables and packs them into boxes. Ballots should remain in the order they have been scanned in order to facilitate easier tracking, if needed, in the future. The poll record is also repacked.

Before the box is sealed, the handler obtains the 'follower' from the system. This document details the scanning and accounting process. The 'follower' is also placed inside the ballot box. The box is sealed with a clear, tamperproof and traceable envelope. Each box is placed in storage at a pre-determined location for traceability.

16.9 Security Procedures for Polling Places

16.9.1 Polling Place Physical Security

The following physical security mechanisms are integrated within the ImageCast devices:

- Tamper-proof screws are used for all external fixturing.

- Each device door is secured with an appropriate locking mechanism (hasp-type for either physical locks or tamper seals and security screws).

- The ballot box has its own locks for each of the ballot box compartments.

As per jurisdiction's regulations, poll workers should perform an orderly shut down of the tabulator to protect the units in the event of vandalism or civil disobedience. If the pollworker determines that a shutdown is required, given the severity of the disruption in the polling place, the following actions should be taken:

1. Document the public counter

2. Power down the tabulator

3. Cover the machines with available covers or move them to a safe place

4. Remove laptops or other computing devices out of the polling place

16.10 Audit Trails

16.10.1 ImageCast Evolution Audit Trail Files

This section describes the context and purpose of voting system audits and related, specific functionality requirements. Election audit trails provide the supporting documentation for verifying the accuracy of reported election results. They present a concrete archival record of all system activity that is related to the vote tally. As such, election audit trails are essential records that provide public confidence in the accuracy of the tally, information in the event of a recount, and evidence in the event of criminal or civil litigation.

ImageCast Evolution Audit Log File

Every action, event, and operation that occurs on an ImageCast Evolution will be permanently logged to the audit log file that exists on both memory cards. This file is encrypted and digitally signed to protect its integrity.

Authorized users can use the LCD touchscreen to print this Audit Log report on the ImageCast Evolution 's internal printer. This LCD onboard Audit Log report only reports on a maximum of forty audit events (i.e. the last forty audit events to have occurred. If users use the LCD screen to request a report of more than forty audit events, the system will still only report the maximum forty audit events).

This printing procedure meets the following:

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

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

- The audit record entries are kept physically secure.

16.10.2 ImageCast Central Audit Trail Files

Verifying the Number of Votes at Each Polling Station

Every action, event, and operation that occurs on an ImageCast Evolution will be permanently logged to the audit log file that exists on both memory cards. This file is encrypted and digitally signed to protect its integrity.

Authorized users can use the LCD touchscreen to print this Audit Log report on the ImageCast Evolution 's internal printer. This LCD onboard Audit Log report only reports on a maximum of forty audit events (i.e. the last forty audit events to have occurred. If users use the LCD screen to request a report of more than forty audit events, the system will still only report the maximum forty audit events).

This printing procedure meets the following:

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

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

- The audit record entries are kept physically secure.

ImageCast Central Audit Log File

Every action, event, and operation that occurs on the ImageCast Central is permanently logged to an audit file that exists on the host workstation and the host results server. The report.txt is generated to display ICC election reports/statistics. The slog.txt records all activities and can be found at **C:/dvs/project/config/log /slog.txt.**

This printing procedure meets the following:

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

- The entries can be identified to facilitate their recognition, segregation, and retention.

- The audit record entries are kept physically secure.

AuditMark Images

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

The ballot image with AuditMark on ImageCast Evolution consists of two parts:

1. The top part of the image contains a scanned image of the ballot (the voter markings are of particular importance).

2. The bottom portion consists of a machine-generated analysis summary showing each mark that the unit interpreted for that particular ballot.

The ballot image with AuditMark on ImageCast Central consists of three parts:

1. 1st page - Ballot front side

2. 2nd page - Ballot back side

3. 3rd page - audit mark

Audit Trail Files

The Audit trail file on ImageCast Evolution is stored in memory and contains a chronological list of all messages generated by the ImageCast software. This includes:

- System startup messages (recorded by the Application Loader)

- System self-diagnostic test messages (memory test, module initializations)

- All administrator operations (messages include the "access key" id number)

- Source and disposition of system interrupts resulting in entry into exception handling routines

- All messages generated by exception handlers' notification of system login or access errors, file access errors, and physical violations of security as they occur, and a summary record of these events after processing

- Non-critical status messages that are generated by the machine's data quality monitor or by software and hardware condition monitors

- All scanned ballots

- All system errors (paper jams, power failures, hardware failures, data errors etc.)

To ensure the integrity of the Audit log, all records added to the file are encrypted using AES-128 and the common key value and the entire file is signed using a SHA-256 hash and the tabulator's unique key value.

On ImageCast Central, 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 **C:/dvs/Temp/.** 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:

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

- The entries can be identfiied to facilitate their recognition, segregation, and retention.

- The audit record entries are kept physically secure.

16.10.3 EMS Audit Trail File

EMS Audit Log

From the moment the project is created in EMS to the moment the project becomes deactivated, the EMS system keeps an activity log within the EMS Database. This activity log stores every action performed by any user within the system, and thus functions as a detailed audit log that can be analyzed and printed in the form of an audit report. The audit information cannot be modified or permanently deleted from the EMS client applications. However, the report should be exported for archiving purposes as part of the record retention policy. Keeping in mind that audit logs can contain a significant amount of information, it is the responsibility of the administrative user to regularly archive log information. Doing so will clear the log and create more space for new records.

The auditing activity displays this auditing report on the screen of the EMS EED client application. The reports found in the Audit Log Report Group are associated with the usernames that have been created within the EMS EED (e.g. Admin and Techadvisor). That is to say, the produced reports will log each action that a specific user performed at a certain period of time. These reports show details such as "User Name", "Report for Time Period", "Time" and "Action". The report is generated in simple text format and can be exported into PDF, HTML or MS Excel format. The created report is stored on the NAS and signed using the election project key. Reports are created with the assigned date, and multiple reports can be generated.

Unauthorized Access to the Access Control Capabilities of the System

EMS application user accounts (including roles, permissions and user credentials) are stored within the EMS Database. Access to this database can only be achieved by using the EED and RTR client applications. No other components of Democracy Suite have access to this database repository. Direct access to the database platform (server and underlying database engine) requires special administrative privileges and cannot be performed from any of the client applications. This means that to access the EMS Database directly, the user has to first establish prerequisite infrastructure equipment, bypass physical security measures, pass the Windows Server authentication, and then pass SQL Server authentication.

Reports

Election Event Designer contains six groups of reports presenting a variety of application activities. The convenience of the report tool is that it can be easily previewed, formatted, and filtered. Additionally, the user can obtain the custom prepared reports that modifies, deletes, or adds new sets of reports. The report tool contains XSLT, otherwise known as XSL transformations, that converts XML files into HTML, PDF, or XML with the ability to be opened in Excel. The default XSLT is imported into the election project when a new project is created.

Create, Preview and Delete Reports

The Report navigation group consists of the Election Project, Divisioning, Election Event, Tabulation, System Report, and Audit Log reports groups. The procedure for creating reports is the same for all.

To create a report, perform the following steps:

1. Expand the **Reports** navigation group and select one of the report items.

2. Select the option from the **Report Name** drop down menu. The drop down menu contains a list of available reports for the selected Reports Group.

3. Select the **Transformation Name** you can choose between one of the presented options.

4. Click **Create Report**.

5. The creation of the report will take a few seconds. While the system collects all of the data needed to create the report, the progress bar will appear. The report viewer will open upon completion.

6. Each report spreadsheet contains the election project and report name.

XML files can be converted into HTML, PDF or Excel by applying a chosen report transformation.

1. Select the XML report from the list of created reports.

2. Choose the **Transformation Name** option from the drop down menu.

3. Click **Apply** to apply the chosen transformed report.

To preview the created report, navigate to the **Report Group** main activity. Select the **Report Name** and click **Search**. One or more reports matching your search criteria appears in the main activity screen. Select the reports from the list and click **Open**.

To delete one or more reports, perform the following steps:

1. List the reports.

2. Select the reports.

3. Click **Delete** to delete them from the NAS repository.

How to Download Reports from the NAS Server

All created reports are stored on the EMS NAS servers. The created report can be opened and previewed by using the Document Management window. If you wish to print the report, you must first download it from the NAS server and save it to your local drive.

1. Open **Document Management** and expand the **Actions** menu.

2. Select the **Open Document Management** submenu to open the **Document Management** window.

3. Select the target folders: on one pane select the EMS NAS server, and on the other select where you would like to save the report on your local drive.

4. To navigate to the reports, double-click on the **Reports** folder.

5. Double-click on the desired **Report Group**. Depending on the chosen report transformation, the reports will be presented in XML, PDF and Excel format. Additionally, the system will create a SHA file for each report.

6. Drag the report from the EMS NAS server and drop the file to your desired local location.

How to View System Level Logs

EMS system level logs for the EMS can be found in the Application and Service logs on the computer running the application. To access these logs:

1. Right Click on **Computer** and select **Manage**.

2. Expand **Event Viewer, and Applications and Services Logs** select **EMS System**.

⊘ Additional logs for individual EMS application machine/server components can be found in the program files where the application was installed. For example to view logs from the Election Event Designer view C:\Program Files\ Dominion Voting Systems\Election Event Designer \Log

Results Auditing

After processing election results, there is a need to inspect the system operation in a more detailed manner. As a result, the EMS RTR client application has the ability to produce a detailed audit report on how ballots were marked and how they were interpreted by tabulator devices. In addition, EMS RTR collects and copies all relevant ballot scans to be visually inspected. Furthermore, all ImageCast log files are visible through the RTR application.

For full details on the ImageCast system's audit functions, please refer to the following user guides:

- *Democracy Suite EMS Election Event Designer User's Guide*
- *Democracy Suite Results Tally and Reporting User's Guide*

ImageCast Adjudication Audit Trail

The ImageCast Adjudication system keeps track of all adjudication actions taken on a ballot, including user name and time of the action, and stores this information in the database. To obtain this information, an Adjudication Administrator can create an Activity Report in PDF format is also cryptographically signed so that modification of the document is evident.

Additionally, adjudicated ballot images are appended with audit information in the same manner that the ImageCast Central appends interpretation information.The appended AuditMark forms a permanent record of adjudication actions taken on a ballot and can be easily inspected at any time by opening the image with a standard image viewer.

System-level logs also record information about system operation and errors. This is stored in the Windows Event Log on the EMS server, as well as in each Adjudication workstation.

To access the ImageCast Adjudication logs:

- From the Start Menu, right-click Computer and select "Manage". This will open **Server Manager** on the EMS server, or **Computer Management** on a workstation.
- On the left pane, expand "Diagnostics" if on the EMS server, or "System Tools" if on a workstation.
- Expand **Event Viewer**.
- Select the "DVS Adjudication" log under "Applications and Services Logs".
- To ensure all information listed is up to date, select the **Refresh** button in the **Actions** pane on the right.

- On the center pane, you will see entries logged by Adjudication components. The **Source** column will identify the exact component (e.g., one of the services, or the client application).

Lookup

After determining a truly random sample size (usually from amongst the precincts in an election) and elements to review within that sample (paper ballots, ballot images, log files, chain of custody, etc.), the first step when performing an audit is to lookup the list of scanned ballot images and log files based on specific criteria. The generation of audit record entries will not be 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 user can export audit images for a subset of result files, for a single contest or for all contests. For each export a separate subfolder will be created. Inside the subfolder maximum two subfolders can be created:

- published: Folder containing all images belonging to published results.

- notpublished: Folder containing all images belonging to non-published results.

If no contest was selected the following subfolders will be created inside these folders:

- BlankBallot: No contest was marked on the ballot.

- Blank: At least one contest did not have any votes on the ballot.

- UndervotedNotBlank: At least one contest was undervoted on the ballot.

- Overvoted: At least one contest was overvoted on the ballot.

- Regular: Each contest was fully voted on the ballot.

- Writein: Write-ins were marked on the ballot.

A similar approach is available for log files produced by the ImageCast filtering can be performed based on tabulator instance.

EMS Data Center Physical Security

The Democracy Suite EMS environment must be physically secured in a locked area with security access controls in place. No access to this area should be permitted to unauthorized personnel. Dominion Voting requires that an access control system is utilized that will automatically log and record each individual's access to the EMS Data Center environment

Such systems include the use of electronic passes or biometrics to gain entry into the secure area. In addition, if cameras and/or a card-key system are not in use, all personnel must be required to sign in and out when accessing the secure Democracy Suite EMS environment area. The access log must include: name, organization, purpose of access, date, time in, time out, and signature.

Buildings and rooms within those buildings which contain EMS and ICC installations must be secured. Security for these can include traditional methods such as keys and locks, card-keys, and surveillance cameras. Each jurisdiction and building is different; thus an exhaustive discussion of election system building security is not possible in this Guide. Consult with your jurisdictions law enforcement or other security related agency for assistance in securing the voting system installation.

Operational and Maintenance Procedures

As with any information and communication technology system, the Democracy Suite EMS platform requires some regular operational and maintenance procedures. These procedures ensure the reliability, availability and security of the overall system. These procedures are usually scheduled for off-election periods, either before or after the election event. Some of the operational procedures, however, should be performed regularly (daily) throughout its use.

Operational procedures to be performed in regular intervals (daily while the system is in use) are:

- Review of the log files for each of the system components (including EMS server components, EMS client components, networking switch equipment, etc.).

- Review of the EMS-specific audit log files.

- Review of the back-up procedures and execution of additional back-up procedures (if needed).

- Review of anti-virus and any other security software event logs.

16.10.4 ImageCast X Audit Trails

Every action, event, and operation that occurs on an ImageCast X will be permanently logged to the audit log file that exists on both memory cards. This file is digitally signed to protect its integrity.

Authorized users can see the Audit Log report on the screen. Audit Log can be exported onto a USB stick.

The export procedure meets the following:

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

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

- The audit record entries are kept physically secure.

17 Biennial Hardware Certification and Notification

California Elections Code requires jurisdictions to inspect voting systems, and certify their accuracy on a biennial basis (once every two years).

All tabulators, scanners, elections management software, and supplementary equipment must be certified by California's Secretary of State prior to their use in any election taking place in California.

All specialized tally equipment must be certified for use in elections by the Secretary of State prior to use in any election.

17.1 Notification of Equipment

For each statewide election, the responsible county Election Official shall cause to be prepared a list, including quantities, of all equipment to be used to tabulate votes during the semi-official and official canvass.

Seven days before each statewide election, the Election Official shall certify to the Secretary of State the results of the logic tests as well as the accurate functioning of all ballot tally equipment. This certification shall also affirm the use of the same equipment for the Pre-Election Logic and Accuracy test, and for semi-offcial and official vote canvasses. In the event of a change to the ballot tally program after certification, an amended certificate shall be submitted no later than the day before the election.

In the event any equipment is repaired, altered or replaced following the certification specified in this section, and prior to completion of the official canvass of the vote, an amended certification of Logic and Accuracy testing and a revised list of equipment used must be submitted to the Secretary of State no later than submission official canvass.

18 ImageCast Central Device Configuration Files

The ICC uses a default DCF as provided with the EMS release and imported into the EMS EED project during the programming of the election project. The settings should not be changed. However, if you require further information about the default settings in the DCF file, please refer to the ImageCast Device Configuration Settings document.

19 ImageCast Evolution Machine Behavioral Settings

ImageCast Evolution Machine Behavior Settings is a configuration file used in conjunction with the ImageCast Evolution in order to configure the tabulator's behavior during an election. The Machine Behavior Settings file is imported into the EMS Election Event Designer application for configuration and customization. Once imported, the file can then be modified by selecting either numerical values or options for each of the tabulator's functions. The tables in this Appendix describe each configurable function of the ImageCast Evolution , and the numerical values and options that can be altered in order for the machine to behave in ways that adhere to the State of California's election requirements. The two sets of tables describe the appropriate MBS settings for "Polling Place" and "Early Voting" tabulators.

The MBS file structure for the ImageCast Evolution tabulators is divided into the following categories:

- Security
- Results Files
- Standard Voting
- Accessible Voting
- Touch Voting
- Voting with Smart Card
- Voter Languages
- Image Processing
- Write-ins
- Thermal Printer
- Provisional/Challenge Voting
- Advance Administration
- Results Transfer
- Shoe Shine
- HW Settings
- Voting Rules

Each category contains its own set of MBS options that can be configured to adhere to election requirements

19.1 Polling Place Tabulators

The default MBS file that is provided with the EMS release and imported into the project, is the file that should be used for the polling place (Election Day) ICE tabulators.

19.2 Early Voting Tabulators

The Early Vote MBS differs from the default MBS (which is provided with the EMS release) in that some of the Thermal Printer Tape settings are changed.Early Voting tabulators are typically programmed for many precincts and if the number of Ballot Types and Precincts programmed on a tabulator is very large, the zero and especially the report tape can be extremely long. To avoid that, some settings are changed in the MBS to shorten the length of the report tape.

Name	Options (select from the drop-down list) / Description
Number of zero tape copies	Number of zero tapes to be printed
Show zero tape copies menu item	0 - Hide Number of Copies menu item for zero tape report
	1 - Show Number of Copies menu item for zero tape report (default)
Allow print/don't print option alternation for the zero tape	1 - Allow
	1 - Allow (default)
Interrupt Tape Alternative Selector	**- Print (default)**
	- Don't Print
Number of tape copies	Number of interrupt or zero tapes to be printed (when poll is reopened)
Show interrupt tape copies menu item	0 - Hide Number of Copies menu item for interrupt tape report
	1 - Show Number of Copies menu item for interrupt tape report (default)
Allow print/don't print option alternation for the interrupt tape	1 - Allow
	1 - Allow (default)
Results Tape Alternative Selector	**- Print (default)**
	- Don't Print
Number of result tape copies	Number of result tapes to be printed
Show result tape copies menu item	0 - Hide Number of Copies menu item for results tape report
	1 - Show Number of Copies menu item for results tape report (default)
Allow print/don't print option alternation for the results tape	1 - Allow
	1 - Allow (default)
Thermal printer continue allowed	0 - Continue printing on new thermal printer tape not allowed
	1 - Continue printing on new thermal printer tape allowed (default)
Cancellation of printing on open poll allowed	1 - Cancel allowed
	1 - Cancel allowed (default)
Cancellation of printing on reopen poll allowed	1 - Cancel allowed
	1 - Cancel allowed (default)
Cancellation of printing on close poll allowed	1 - Cancel allowed
	1 - Cancel allowed (default)
Zero tape template	1 - Report per Contests on CF0
	1 - Report per contests on CF0 (default)
	2 - Report per precincts and contests on CF0
	Any other suffix for templates on CF1
Interrupt tape template	**empty string - Default interrupt tape report on CF0 (default)**
	Any other suffix for templates on CF1

Result tape template	1 - Report per Contests on CF0
	1 - Report per contests on CF0 (default)
	2 - Report per precincts and contests on CF0
	Any other suffix for templates on CF1
Statistics tape template	**empty string - Default statistics tape report on CF0 (default)**
	Any other suffix for templates on CF1
Zero view template	empty string - Report per ballot manifestations and contests on CF0
	1 - Report per contests on CF0 (default)
	2 - Report per precincts and contests on CF0
	Any other suffix for templates on CF1
Interrupt view template	**empty string - Default interrupt view report on CF0 (default)**
	Any other suffix for templates on CF1
Result view template	empty string - Report per ballot manifestations and contests on CF0
	1 - Report per contests on CF0 (default)
	2 - Report per precincts and contests on CF0
	Any other suffix for templates on CF1
Statistics view template	**empty string - Default statistics view report on CF0 (default)**
	Any other suffix for templates on CF1
Number of signature lines on report tapes	Number of signature lines. Range: 0 - 100
Zero tape certification text	
Results tape certification text	
Keep ballot order of choices within precinct	**0 - Use global order for choices in reports per precinct (default)**
	1 - Use ballot order for choices in reports per precinct
Report left margin	Report margin. Range: 0 - 5
Report right margin	Report margin. Range: 0 - 5
Show Overvotes on the Reports	**- Hide on the Reports (default)**
	- Show on the Reports
Show Undervotes on the Reports	**- Hide on the Reports (default)**
	- Show on the Reports
Show Double-Votes on the Reports (NY/NJ)	**- Hide on the Reports (default)**
	- Show on the Reports
Show Overvotes for RCV contests on the Reports	**- Hide on the Reports (default)**
	- Show on the Reports
Show Undervotes for RCV contests on the Reports	**- Hide on the Reports (default)**
	- Show on the Reports
Show combinations for RCV contests on the Reports (for QA purpose)	**- Hide on the Reports (default)**
	- Show on the Reports
Number of rank levels to report in RCV contests	
Show Write-in Precedence on the Reports	**- Hide on the Reports (default)**
	- Show on the Reports
Show Number of Voted Contests on the Reports	**- Hide on the Reports (default)**
	- Show on the Reports

	- Show on the Reports
Show Number of Blank Contests on the Reports	- **Hide on the Reports (default)**
	- Show on the Reports
Show Ballots Cast on the Reports	- **Hide on the Reports (default)**
	- Show on the Reports
Show Certification Text and Signature Lines after each precinct on the Reports	- **Hide on the Reports (default)**
	- Show on the Reports
Show Elector Groups on the Reports	- Hide on the Reports
	- **Show on the Reports (default)**
Show Non Partisan Elector Group Title on the Reports	- Hide on the Reports
	- **Show on the Reports (default)**
Name for non-partisan contests group	Name of non-partisan contests group when contest are grouped by elector groups (open primary)
Name for party preference contest group	Name of party preference contest group when contest are grouped by elector groups (open primary)
Show Elector Groups Summary on the Reports	- **Hide on the Reports (default)**
	- Show on the Reports
Number of ballots warning limit	A border line number of ballots assigned to tabulator that warns users that tape report might be too long. 1 to enable warning
Number of polling districts warning limit	A border line number of polling districts assigned to tabulator that warns users that tape report might be too long. 1 to enable warning

Early Vote MBS settings

20 ImageCast X Configuration Files

ImageCast X Machine Configuration File (MCF) is a configuration file used in conjunction with the ImageCast X in order to configure the device's behavior. The Machine Configuration File is imported into the EMS Election Event Designer application for further configuration and customization. Once imported, the file can then be modified by changing values or options for each of the tabulator's functions.

The MCF file structure for the ImageCast X tabulators is divided into the following categories:

- Voting Rules
- Report printer type
- Electronic mobile ballot
- AVS
- Timeouts
- Battery
- Write-in
- Report
- MCF version

Each category contains its own set of MCF options that can be configured to adhere to election requirements.

20.1 Election Day ICX Configuration

The default MCF file that is provided with the EMS release and imported into the project, is the file that should be used for the polling place (Election Day) ICX tabulators.

20.2 Early Vote ICX Configuration

The default MCF file that is provided with the EMS release and imported into the project, is the file that should be used for the early vote ICX tabulators.

21 Election Event Designer Supplemental Setup Instructions

21.1 Jurisdictions Serviced by Dominion Voting's Service Bureau

Most of the jurisdictions will have their elections programmed by Dominion Voting's service bureau. In these cases, the jurisdiction will receive the election database which they will then restore on their Democracy Suite System.

21.2 Jurisdictions Programming Their Own Elections

Specific procedures on how to create their election project will be provided to each jurisdiction programming their own election via Democracy Suite System, after purchasing the system. Included in those specific procedures will be some specific steps that those jurisdictions will need to complete to ensure a successful programming of the election. Some of those specific procedures and tips are described in the Election Event Designer Supplemental Setup Instructions.

21.2.1 Creating Election Project

In the process of creating a new project in the EMS EED, the name of the project is defined. The name is not changeable after the project has been created, so the jurisdictions are advised to have the final name of the project defined in advance.

Set Ballot Consolidation

In an election project, ballots can be consolidated on different levels. Ballot Consolidation determines the number of ballots created in the project. Consolidation can be set for the lead card and for tail cards as desired. Ensure that you understand different types of consolidation and choose the most appropriate one for your jurisdiction's needs. Ballot Consolidation is set in the 'Project Parameters' dialog window needs to be addressed during the Election Project Definition phase. For more information on consolidation types, and how to set it for your project, please refer to *Democracy Suite EMS Election Event Designer User Guide* , **Section 4.7.3.1 Ballot Generation Options**.

⚠ *If you are unsure of which option to choose, please contact your Dominion Voting representative.*

Setting Header Watermark

In order to set watermark for header, please open page setup File - Page Setup in template editor and select desired background image. If image is smaller than document, it will be repeated in background to ll all background. If you do not want to repeat image, but to display one image, you will need to adjust image size to match document's size. Image width should be equal to size of the text document multiplied by 72. Let's say you have ballot header 2 inches high on universal multi column ballot (4 columns) and want to set centered watermark image. You will need to create another image of size 522x144 and place watermark image inside it (centered). When you add that image as background of text document it will not be repeated because it matches document's size and it will have watermark centered. Universal multi column ballot header widths as listed in the following table:

Grid Name	Header Width (in)	Picture width (px)
Right Side VB 10 ranks (4 columns)	7.25	522
Right Side VB 9 ranks (3 columns)	7.29	525
Right Side VB 7 ranks (2 columns)	7.25	522
Left Side VB Position (3 columns)	7.08	510
Left Side VB Position (2 columns)	6.87	495

Maximum Number of Precincts to Associate to an ImageCast Evolution

Depending on the consolidation type selected in the election project, the number of ballots that is created for an election could be very large. This number will depend on a number of factors, including: number of precincts, number of languages and number of elector group combinations.

For the Early Vote ICE tabulators, care needs to be taken with regards to how many precincts are assigned to each of those tabulators, in case when the number of ballots is very large. If the Early Vote ICE is configured to support accessible voting, ensure that ICE MBS is configured to Contest by Contest presentation of the ballot in the accessible voting session. For more information on the MBS and this option please refer to **Section** ImageCast Evolution Machine Behavioral Settings**.**

Defining Counting Group

Counting Groups are used to sort ballots from different groups of voters in EMS Results Tally & Reporting. These typically include Early Voting, Absentee\Mail (Vote By Mail) voters, and Election Day voters. Counting Groups are attached to tabulators and each tabulator can only be part of one Counting Group. The 'Election Day' Counting Group exists by default. For more information on Counting Groups and how to set them in your project, please refer to *Democracy Suite EMS Election Event Designer User Guide* , **Section 6.4 Defining Counting Groups**.

Defining Polling Places

This section describes how to create polling places (voting locations) **with the exception of Election Day voting locations** which will be automatically created in the later steps during tabulator creation. I n this example we will create polling locations to represent the Election Headquarters and Early Vote Centers. More polling places can be created if needed. For more information on how to create Polling Places, please refer to *Democracy Suite EMS Election Event Designer User Guide*, **Section 6.7 Defining Polling Places**.

Defining Tabulators

For a typical election, a jurisdiction will need to create the following tabulators:

- "Election Day ICE" - these tabulators will be used to process election day ballots at voting locations. Typically, you create one Election Day ICE per precinct, however, it is possible to connect more than one precinct to any ICE.

- "Write In ICC" - this tabulator is used for scanning Absentee/Mail ballots containing write in votes.

- "Election Day ICC" - this tabulator will be used for processing Provisional Election Day ballots. One tabulator that handles all precincts and will be used for handling Provisional ballots.

- "Absentee\Mail ICC" - this tabulator will be used for processing Absentee and Mail ballots. Create one tabulator which handles all precincts.

- "Early Vote ICE" - this tabulator will be used for processing early vote ballots before Election Day.

- "Election Day ICX BMD" - these tabulators will be used to process election day votes at voting locations. Typically, you create one or more Election Day ICX per precinct, however, it is possible to connect more than one precinct to any ICX.

- "Early Vote ICX BMD" - this tabulator will be used for processing early votes before Election Day.

- "Duplication ICX BMD" - This tabulator will be used for "duplication" of provisional ballots.

For more details, please see Democracy Suite EMS Election Event Designer User Guide , **Section 6.5 Defining Tabulators** and **6.6 Defining Tabulators in Batches**

Configuring Ballot Naming Template

21.2.2 Creating Tabulators in the Ready for Elections Phase

In certain situations, it may be necessary to create additional tabulators in the Ready for Elections phase, after election files have been already created. For example, if a tabulator was forgotten during the initial setup or an additional tabulator must be deployed at a polling place.

1. Any number of tabulators may be created in Ready for Elections.

2. After creating the tabulators, election files must be manually generated. Select the newly created tabulators and click the **Generate Election Files** button.

21.2.3 Fonts, Languages and Ligatures

Certain languages are scripted with ligatures put very simply, each character changes appearance depending on its position in the word, and the adjacent characters. Examples of such languages are Arabic, Bengali and Hindi, amongst others. To ensure such text is correctly displayed on the ballots, special steps must be performed in EED.

In order to display language properly on the ballot headers and other templates in the project, an appropriate font must be selected for each of the languages. Here are example of most commonly used languages and their fonts:

- Hindi: font used **Mangal**. Text must be rendered as image in order to get a valid ballot.

- Japanese: font used **Microsoft JhengHei**.

- Khmer: font used **Khmer UI**. Text must be rendered as image in order to get a valid ballot.

- Korean: font used **Malgun Gothic**.

- Tagalog: font used **Segoe UI**.

- Vietnamese: font used **Arial**.

If you are unsure which font to use for a particular language, or have any other questions regarding language and related topics, please refer to *Democracy Suite EMS Election Event Designer User Guide*, **Section 5 Styling an Election Project** or contact your Dominion Voting representative.

For more information see Democracy Suite EMS Election Event Designer User Guide , **Appendix F - Rendering Text with Ligatures .**

21.2.4 Audio Studio Instructions

If Audio Studio is used to produce an Audio Studio export file, import it into the EMS EED. Please refer to *Democracy Suite Audio Studio User Guide* **Section 5.17 Importing Dynamic Audio Files**.

21.2.5 Creating Additional Audio Files for an Election Project

At times it may become necessary to manually use the Cepstral audio synthesizer to create an audio file for an election project. Additional audio files can be created using the built-in front-end application (SwiftTalker) that is packaged with Cepstral synthesizer used by EED. By selecting the same voices used for each language in the EED project being built, the additional audio material will be consistent with the audio that has already been created. Any missing audio content can be generated by copying & pasting the text for the missing audio string into the SwiftTalker main screen, selecting the option to Export Audio file (File, Export Audio File) and saving the audio string as a WAV file (16 bit,11KHz,Mono option). The saved audio file can then be imported directly into the election project in the EMS EED or indirectly through an Audio Studio export package. CepstralSwifttalker will be installed on the EMS workstation and optionally on other trusted computers.

21.2.6 Tabulator Threshold Settings

It is advisable to check the scanner threshold settings are correct for each of the tabulators. To do this, the Tech Advisor needs to log into the EMS EED project and navigate to Administrator menu item, System Settings option and click on "Scanner Configuration". Default scanner settings might need to change depending on the ballot design or print method used to produce ballots.

21.2.7 Programming of Election Files and Security Devices

Programming of CF Cards

- Expand the 'Tabulation' Navigation menu and select the 'Tabulators' activity. Click 'Search' on the Tabulation - Tabulators context sensitive screen to populate a list of all available tabulators. Note that each tabulator on this list will need to have memory cards programmed for it.

- Double-click on a tabulator to open the 'Tabulator' dialog window.

- Click the 'Create Primary' button on the bottom of the dialog.

- Click 'OK' on the dialog that appears to begin the initialization and copy process.

- After initialization, the Election Event Designer will being copying the files to CF card.

- Once the card is programmed, you will be notified with a dialog. Click 'OK' to confirm and remove the card from the Compact Flash card reader. Be sure to label it. There is no need to remove it safely from the drive as you would a USB stick.

- After creating the Primary memory card, you will create a blank backup memory card. Insert another Compact Flash memory card into the reader and click 'Create Backup' on the 'Tabulator' dialog.

- You will receive notification once the process is complete.

- Repeat each step for every tabulator requiring memory cards.

For more information, please refer to *Democracy Suite Election Even Designer User Guide,* **Section 7.2.1 Programming Memory Cards** .

Programming of iButton Security Key

- Expand the 'Tabulation' Navigation menu and select the 'Tabulators' activity. Click 'Search' on the Tabulation - Tabulators context sensitive screen to populate a list of all available tabulators.

- Double-click on a tabulator to open the 'Tabulator' dialog.

- Click on the 'Users' tab and select the 'Admin' user from the list of available users. Select 'Program Security Key' button.

- A dialog will appear asking you to insert an iButton Security Key into the reader. Do so and click 'OK'.

- You will receive confirmation that the iButton Security Key has been programmed successfully. Click 'OK'.

- Repeat these steps for each iButton Security Key you need to program.

For more information, please refer to *Democracy Suite EMS Election Event Designer User Guide* , **Section 7.2.2.1 Programming iButton Security keys** .

Programming Tech Advisor Smart Cards

1. Ensure you have opened your election project in EED as a user with an Administrator or Tech Advisor role.

2. Go to Settings - Project Parameters - Smart Card tab.

3. Click View / Update for the Tech Advisor SC pin field. The Smart Card Pin dialog will appear.

4. In the User Password field, enter the password used for opening the election project, and click Verify.

5. In the Pin field, enter the pin for the Tech Advisor Smart Card you wish to program, and click Update Pin. Please Note: The Pin can only contain numerals, and must be at least 4 digits and at most 8 digits.

6. Click Close.

7. Back in the Smart Card tab of the Project Parameters dialog, click Program Smart Card, insert the card in the reader, and follow the prompts.

Program USB flash drive for Election File programming group

Once election files have been created and the project is in Ready for Election the EED user can program a USB flash drive containing the programming group election file by performing the following steps:

1. For a programming group of type, Election File the user can click the Program USB button.

2. The system will present a dialog asking the user to insert a USB flash drive.
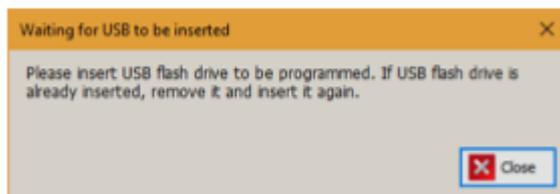
3. Once inserted EED will copy the data file to the USB stick and inform the user that the data is finished copying.
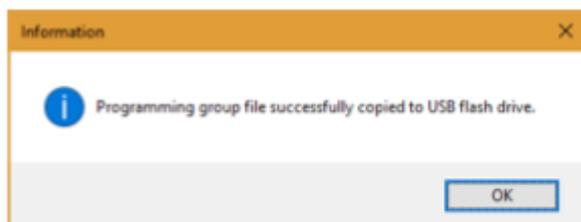
4. The action can be repeated for any Election File programming groups.

21.2.8 Programming of Poll Worker Smart Card

In order to log into the ImageCast Voter Activation application and, from it, program Voter Activation Smart Cards, you will need to program the Poll Worker card in the EMS EED application. Prior to programming your smart card, ensure that you have a smart card reader connected to your EMS workstation and the necessary amount of Smart Cards. In addition to that the appropriate smart card driver must be installed (this should come with your qualified smart card reader device), and the **Smart Card Helper Service** must also be installed as per the *Democracy Suite EMS System Installation and Configuration Procedure* document. Ensure you have opened your election project in EED as a user with an Administrator or Tech Advisor role. The following steps describe how to program Tech Advisor and Poll Worker smart cards

- Go to **Settings** - **Project Parameters** -**Smart Card** tab.

- In the *Poll Worker Smart Card* section, click **View / Update** for the *Reference* pin field. The *Smart Card Pin* dialog will appear.
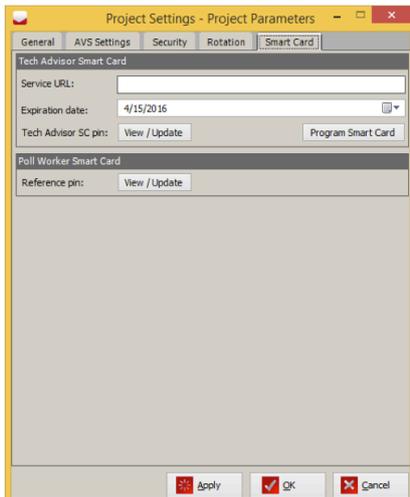
Project Parameters - Smart Card tab screen

- In the **User Password** field, enter the password used for opening the election project, and click **Verify**.

- In the **Pin** field, enter the reference pin and click **Update Pin**. **Please Note**: *The Pin can only contain numerals, and must be at least 4 digits and at most 8 digits*.

- Click **Close**, and close the *Project Parameters* dialog.

Smart Card Pin screen

- Expand the **Tabulation** Navigation menu and select the Tabulators activity. Click **Search** on the Tabulation - Tabulators context sensitive screen to populate a list of all available tabulators.

- Double-click on a tabulator to open the *Tabulator* screen.

- Click on the **Users** tab and select the **Admin** user from the list of available users. (see attached picture)

- Click **Program Smart Card**.

- A screen appears asking you to insert a Smart Card into the reader. Insert the Smart Card and click **OK**.

- You will receive confirmation that the Smart Card has been programmed successfully or error message if programming failed. Click **OK**.

- Repeat these steps for each Smart Card you need to program.

Program Smart Card screen

Programming of smart cards is explained in detail in the *Democracy Suite EMS Election Event Designer User Guide*, **7.2.2.2 Programming Smart Cards through 7.2.2.4 Programming Poll Worker Smart Cards**.

21.3 Exporting of Voter Activation Codes from the EMS EED

Activation codes are used by the system when activating ImageCast Evolution voter sessions at a polling location. The EED application generates activation codes during the *Ballot Content Generation* process, which takes place during the transition from the *Election Project Definition* phase to the *Election Project Styling* phase. Codes are generated for any combination of Precinct Portion and Ballot Group in the election project.

Activation Codes and relevant detail can be viewed and managed in the **Activation Codes** section, accessed from the **Election Event** menu in the left-hand navigation of the EED application. The screen displays the code, its description, as well as the associated Polling District, Ballot Type, Ballot Group and Cycle.
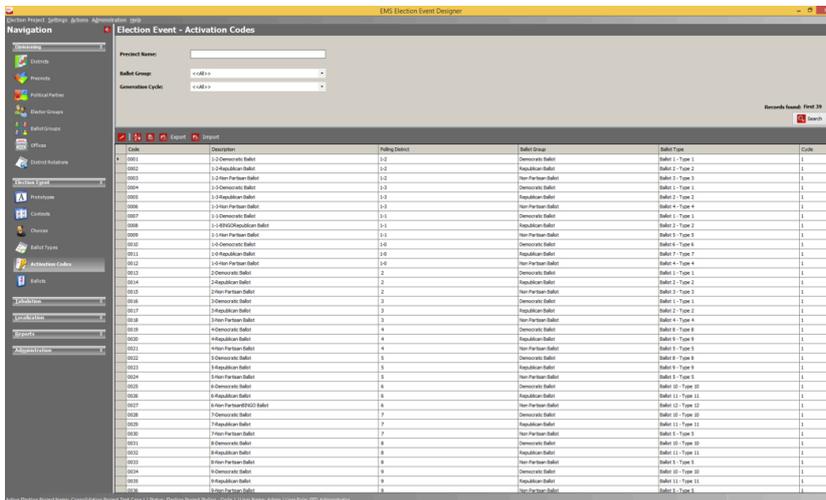
Activation Code screen

The user can edit the code and the description for each item in the list by either selecting it and clicking the **Edit** icon in the toolbar, or double-clicking the item. The *Activation Code* dialog will appear. After ensuring that the new code is unique and the changes are made, click **Save and Close** to apply the changes.
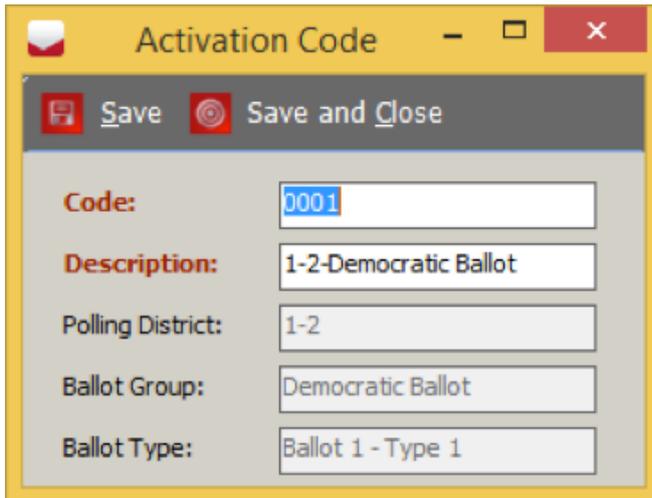
Editing Activation Codes

If you have already created this file in EED and imported in ICVA, skip this step. Otherwise, open the election project in EED on your EMS workstation, and perform the next two steps:

In the **Election Project** menu, select the **Export** menu item and click the **Activation Configuration** item.
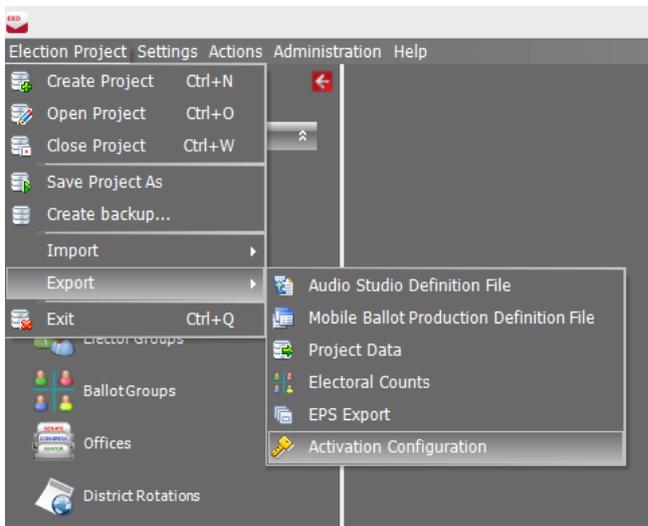
Exporting the Activation Code Configuration File

In the **Save As** dialog, navigate to the location where the file should be saved, and click **Save**. This file must be transported to the polling location computer where ICVA is running.
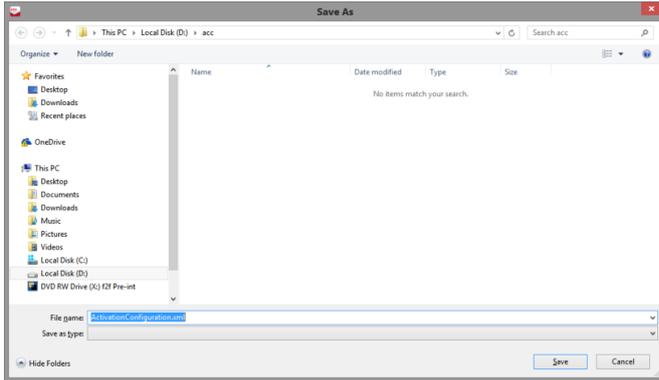
Saving the Activation Code Configuration File

21.4 Importing Activation Codes to the ImageCast Voter Activation Application

When the ICVA application is successfully installed, the next step is to run the application and perform some basic configuration steps.

Insert Poll Worker Smart Card

To start the application, double-click the ICVA shortcut located on the desktop. When the application starts, the user will be prompted to insert the poll worker smart card, in order to authenticate the user.
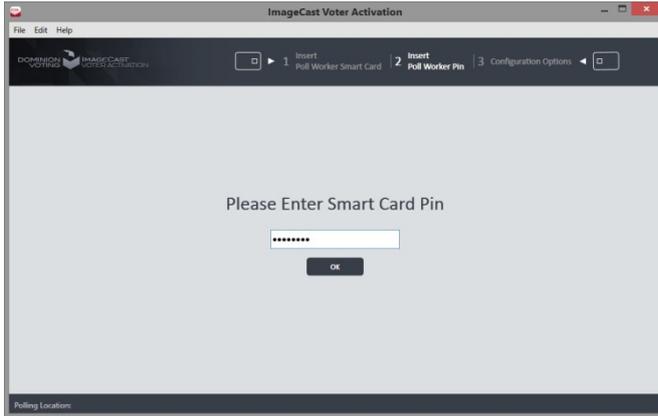
Enter Poll Worker Pin

When the card is inserted, the application will prompt the poll worker for the pin, in order to perform authentication.
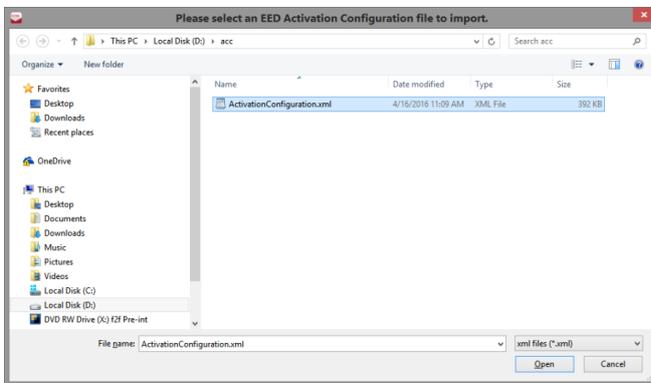
Browse to Activation Code Configuration File

When the poll worker is successfully authenticated, the application prompts the user to identify the activation code configuration file which the application should refer to. This file is exported from the election definition project from the EMS Election Event Designer (EED) application.
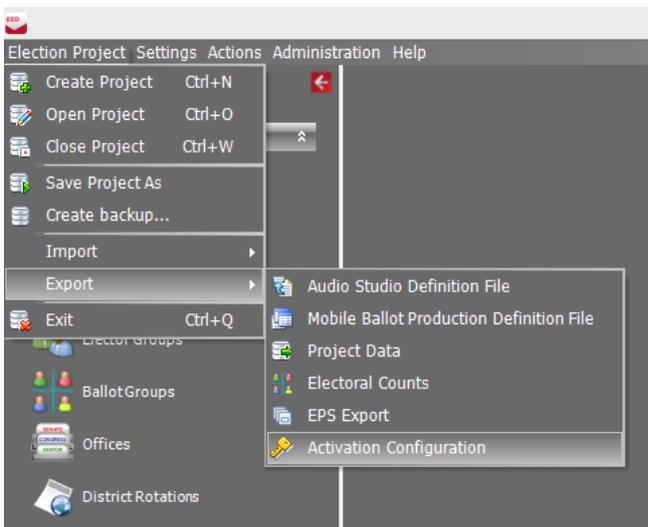
Exporting the Activation Code Configuration File

If you have already created this file in EED and imported in ICVA, skip this step. Otherwise, open the election project in EED on your EMS workstation, and perform the next two steps:

In the **Election Project** menu, select the **Export** menu item and click the **Activation Configuration** item.
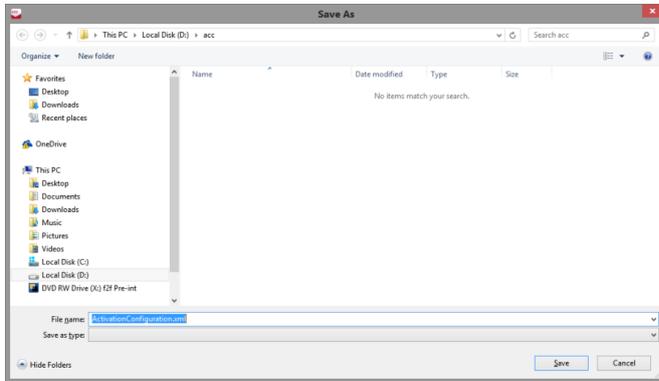
Saving the Activation Code Configuration File

In the **Save As** dialog, navigate to the location where the file should be saved, and click **Save**. This file must be transported to the polling location computer where ICVA is running.
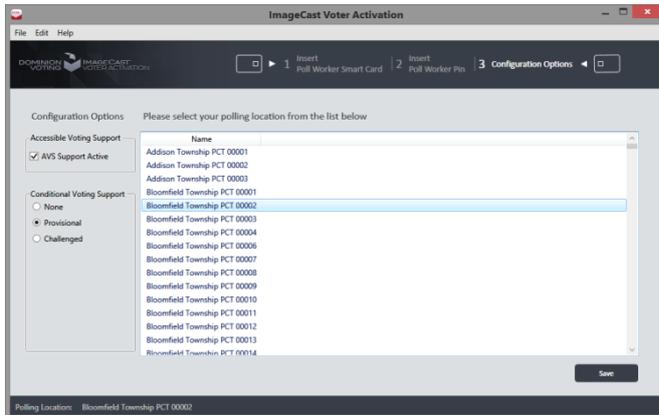
Configuring ICVA

When the activation code configuration file has been imported, the ICVA application will display a configuration screen where the user can indicate:

- Whether the polling application has facilities which provide for Accessible Voting Sessions.

- Whether the polling location allows for provisional or challenge ballots to be cast.

The user must indicate the polling location they are at in the configuration screen. When all the settings have been applied, click **Save**.

Now that the configuration steps have been completed, the application will be ready to accept voter smart cards for programming or reading.

## 21.5 Programming of Voter Activation Smart Card

In order to activate the voting session for a particular Ballot Type on the ImageCast Evolution, the Voter Activation Smart Card needs to be programmed from the ImageCast Voter Activation application. Programming of smart cards is explained in detail in the *Democracy Suite EMS Election Event Designer User Guide* , **7.2.2.2 Programming Smart Cards through 7.2.2.4 Programming Poll Worker Smart Cards**. When the ICVA application has been started and configured properly, it will be waiting for the first Voter smart card to be inserted for programming. The following steps describe the typical card activation and reading cycle.

- A prompt will be displayed to the poll worker, asking for a voter smart card to be inserted.

Insert Voter Smart Card

- After the card has been detected, the application will display a screen showing the contents of the inserted card to the poll worker. The card may be empty, or it may contain some data from a previous session.

- Click **Next** to pick an activation code for the voter's session and move to Selecting a Voter Session Activation Code. Otherwise, the poll worker can also click **Eject** if they wish not to proceed with activating the currently inserted card (next step).
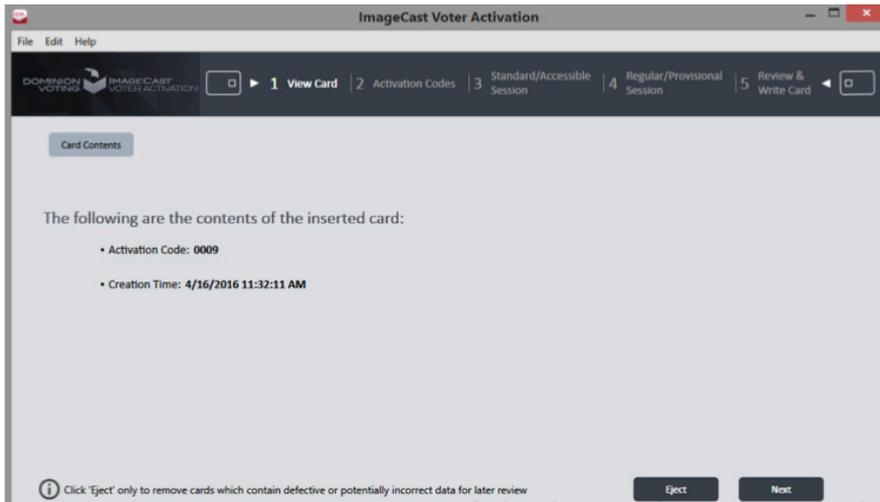
Contents of the inserted Smart Card

- On selecting **Eject**, the application will prompt the user to remove the smart card. Once it is removed, the poll worker will be presented with the situation in step 1 - the application will be waiting for a voter card to be inserted.


Remove Ejected Card

- If **Next** is selected (instead of **Eject**), the poll worker will be presented with a list of applicable activation codes and their descriptions for the polling location where ICVA is running. Select the correct activation code for the voter, and click **Activate Voter Card.**
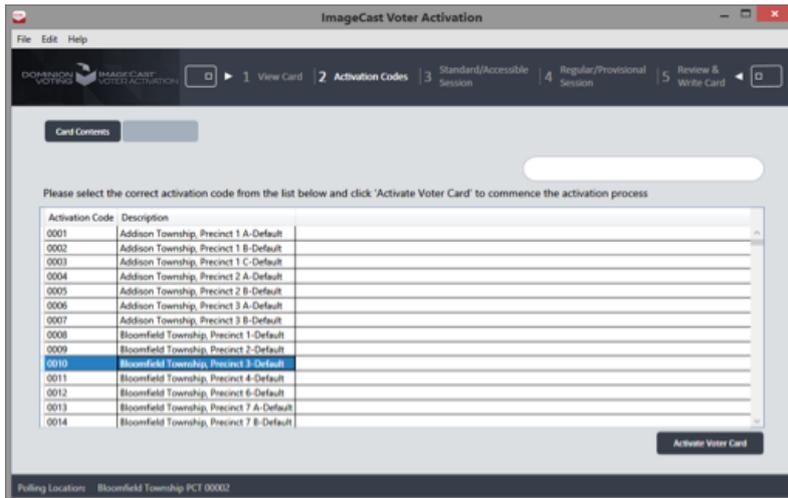
Selecting a Voter Session Activation Code

- If ICVA has been configured to support activation of Accessible Voting Sessions (AVS) at the polling location where it is running , the poll worker will be prompted for the type of session to activate: *Standard* or *Accessible*. Click the button representing the correct session type for the voter to move to the next step.
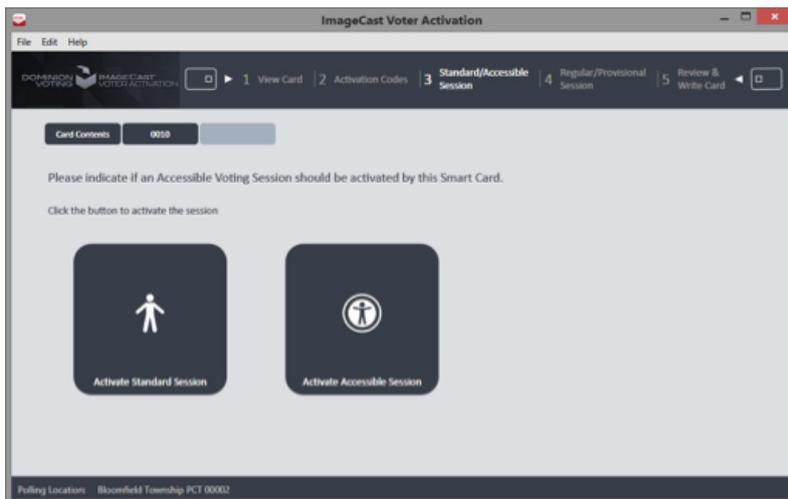

Indicating if Voter Session is Accessibl

- If ICVA has been configured to support provisional or challenged voting at the polling location where it is running the poll worker will be prompted for the type of session to activate: *Regular*, or, depending on the type of conditional voting in the project configuration, *Provisional* or *Challenged*. Click the button representing the correct session type for the voter to move to the next step.
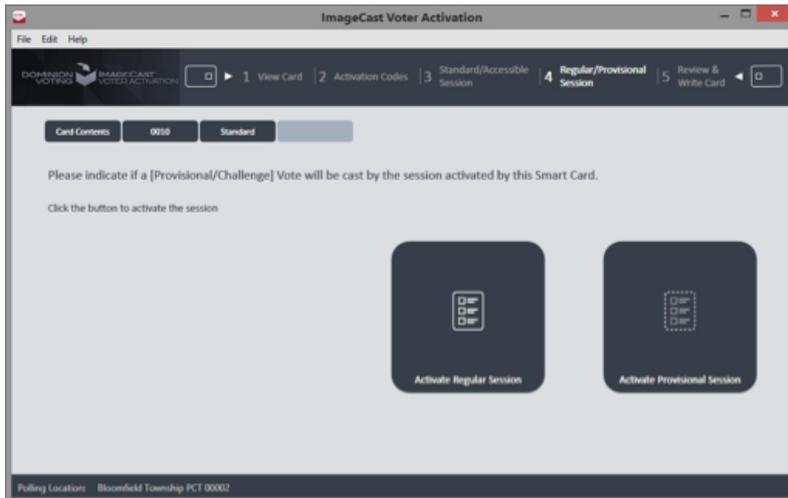
Indicating if Voter Session is Provisional or Challenged

- The next screen will display what the poll worker has indicated should be written to the card. Should any changes be required, the user can click back to the appropriate step in the breadcrumb navigation near the top of the screen, and make the appropriate selections. If the user is satisfied that the data is correct, click **Write** to program the card.
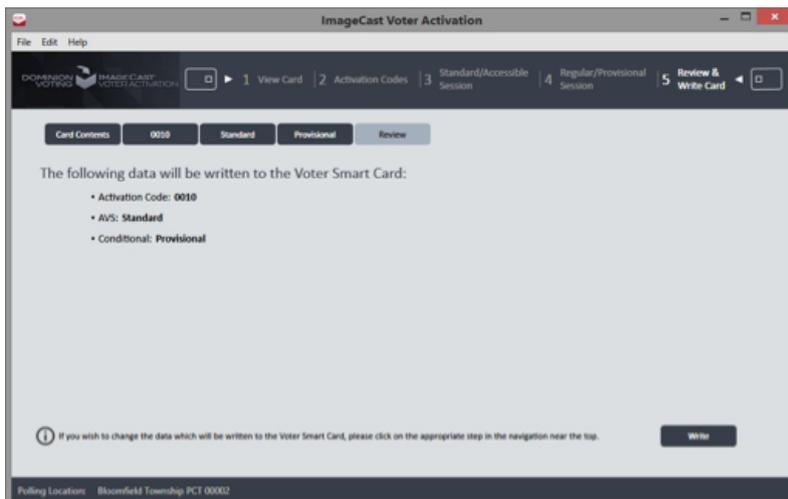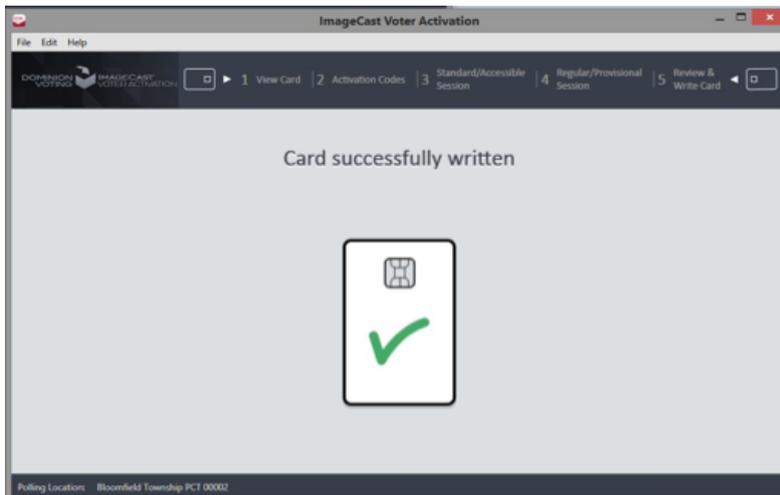

Data to be written to the Voter Card

- The application will indicate that the selections are currently being written to the voter card, and the user will be instructed not to remove the smart card

Programming Voter Card

- The application will inform the user that the card has been successfully programmed.

Card Successfully Written

- The application will prompt the user to remove the smart card. Once it is removed, the poll worker will be presented with the situation in step 1 - the application will be waiting for a voter card to be inserted.

Remove Written Card

21.6 Smart Card Security Recommendations

The ImageCast Evolution and ImageCast X systems utilize smart cards for voter activation with the ImageCast X system additionally using specific smart cards to enable poll worker and technician functionality. The contents of these cards are encrypted and are useable only for the election for which they were programmed. Accessing poll worker or technician functionality on the ImageCast X system requires the physical smart card programmed for the election loaded on the machine as well as an election-specific password.

Overall system security can be enhanced by creating procedures that implement the following security recommendations:

- Label all smart cards with a unique serial number

- When not in use, secure all smart cards from unauthorized access.

- Consider attaching poll worker and technician cards to retractable lanyards that can be worn by authorized personnel while at the polling location. This help maintain positive control of the cards and guard against unauthorized access.

- Regularly inventory poll worker and technician cards throughout the day during their use in the polling location. If a card is not accounted for during inventory, immediately notify election officials.

- Check in and out voter activation cards before and after use by a voter.

What to do with a card that was not accounted for during a regular inventory but is later located:

- Voter activation cards may be reused after they are inserted into the ImageCast Voter Activation station and activated for a new voter. The ImageCast Voter Activation station deletes the smart card's contents as part of its activation procedure.

- Poll worker or technician cards should be taken out of use, if practical, until they can be reprogrammed using EMS Election Event Designer. Reprogramming a poll worker or technician card erases the card's contents before writing the necessary information back to the card.

22 Troubleshooting and Problem Resolution

22.1 Installation and Configuration Troubleshooting

22.1.1 Hardening Script Verification

During installation, the hardening script is applied. However, if the script was not run as Administrator, the following error is displayed.
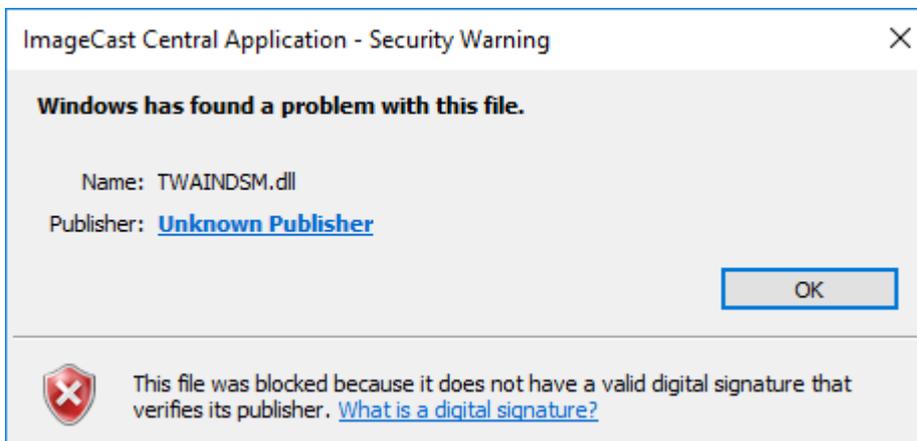
You can verify the settings through the Certificate Path Validation dialog and if needed, apply the necessary settings to resolve the issue.
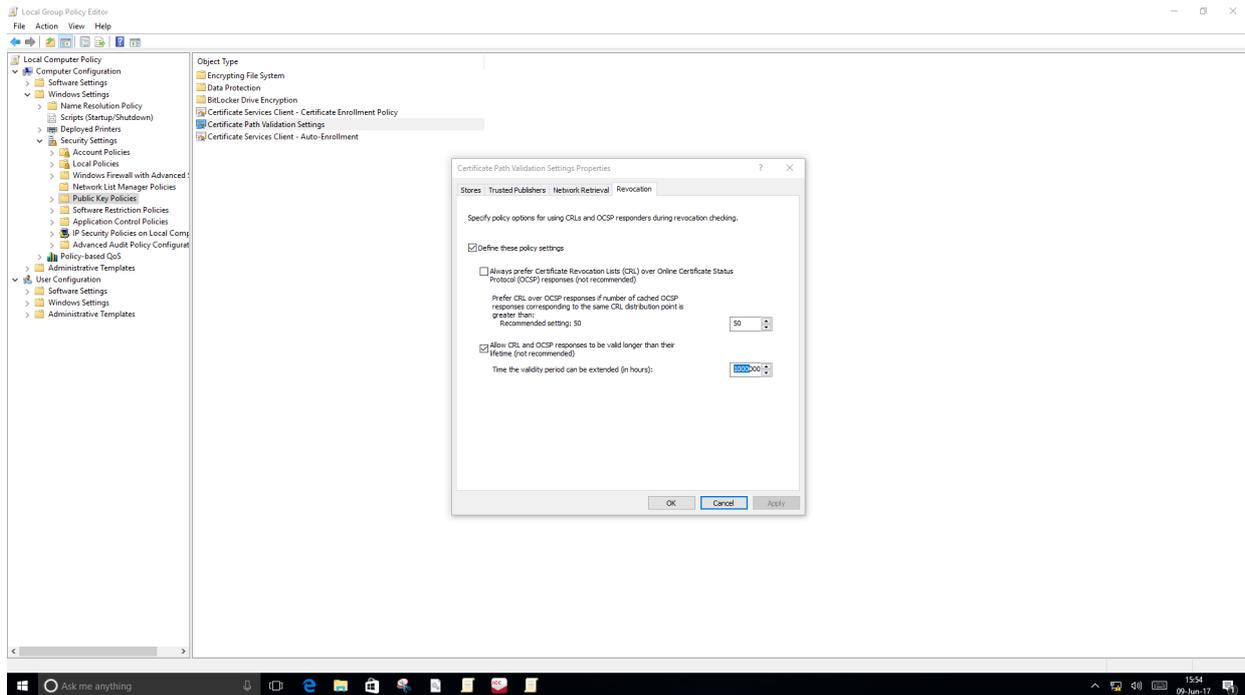
To Check the Certificate Settings:

1. Click **Start**, and then click **Search**.

2. Enter **Edit Group Policy** in the search bar, and then press **Enter**

3. In the Local Group Policy Editor, expand **Computer Configuration**, **Windows Settings** and **Security Settings**, and then click **Public Key Polices**.

4. In the right-side panel, right-click on **Certificate Path Validation Settings**, and then click **Properties**.

5. In the Certificate Path Validation Settings Properties dialog, click the **Revocation** tab and make sure the following check boxes are selected:

   - **Define these policy settings**

   - **Allow CRL and OCSP responses to be valid longer than their lifetime**

6. In the Time the validity period can be extended (in hours) field, enter **1000000** or more.

7. Click **Apply** and then click **OK**.

22.2 ImageCast Evolution Troubleshooting

> ⚠ *Any troubleshooting procedures required to be performed on Election Day **MUST** be performed in the presence and with permission of the Election Staff on duty.*

22.2.1 Replacing a Machine

To replace a machine on Election Day, follow the steps described below in presence of an authorized Poll
Official:

1. Record the number of ballots displayed in the Ballot Counter.

2. If you are in the 'Poll-Worker Menu' turn off the machine by pressing the **Power Down** icon on the top right corner of the Touchscreen LCD followed by the **Shut Down** tab. Otherwise, this step can be disregarded.

3. Lay down the Touchscreen LCD into its storage position then press the *Service ON/OFF* switch into the OFF position in order to completely shut down the unit.

4. Ask the voting official to remove the two (2) Election memory cards from the poll worker port and the administrative port.

5. Lift the machine off from the ballot box and record it for diagnosis.

6. Place the two (2) memory cards into their respective ports of the replacement unit.

7. Place the replacement unit on the Ballot Box.

8. Lock the tabulator in place.

9. Lift the Touchscreen LCD of the replacement unit into its operating position then press the *Service ON/OFF* switch onto the ON position to power it up.

10. Upon the *Insert Security Token Screen* prompt, place a valid administrative key on the Security Keypad.

11. Type in the correct credentials to access the *Election Application Main Menu*.

12. Select the **Open Poll** tab (in the Main Menu), followed by selecting **Open** under **Poll Status** (in the ICE Poll-Worker menu).

13. Enter the correct credentials to Open the Polls in the new machine. The system will display a Warning message indicating that the ballot results already exist. Press the OK button to proceed to the ICE Poll-Worker Menu.

14. In the Main Menu, select the **Utilities** button followed by **Report** in order to print an Interrupt Report. Verify that the *Total Voters* count on the Interrupt Report matches the "Ballot Counter" number you recorded in Step 1.

15. Remove the paper printout from the original machine and hand it to the Poll Official for the permanent record.

16. Ensure that the Poll Official places security seals on the *CF1 Door* and *CF2 Door* as required by their jurisdiction.

17. The replacement unit is ready for operation. To proceed, select the desired option on the main menu. Follow standard close poll procedures at the end of voting.

22.2.2 Paper Jams

In the event of a paper jam, the system runs a self un-jam routine to eject the paper and return it to the user for re-feed. An error message is displayed if the un-jam routine fails to clear the paper jam.
The paper jam can occur either in the *Scanner path* or the *Printer path*. Visually, identify the location of the Paper Jam then refer to the appropriate section below to resolve the issue.

Paper Jam in Scanner Path

- If the ballot is visible from either the front ballot entry slot, or any of the two diverter slots on the bottom of the unit:

    - Gently pull the ballot out. Ensure that the ballot does rip or tear in the process.

    - If you removed the unit from the ballot box to access the jammed ballot, place the unit back onto the ballot box.

    - Be sure to properly account for the jammed ballot, placing it in the ballot box if it has already been cast (this is unlikely) or placing in the ballot entry slot so that it can be tabulated.

    - Replace the unit if the jam reoccurs.

- If the ballot is stuck within the machine and is not visible from any of the accessible slots:

    - Place the iButton Security Key on the Security Keypad and insert the appropriate credentials.

    - The machine will automatically run the unjam procedure to clear the ballot jam.

- If this fails to resolve the issue, replace the unit.
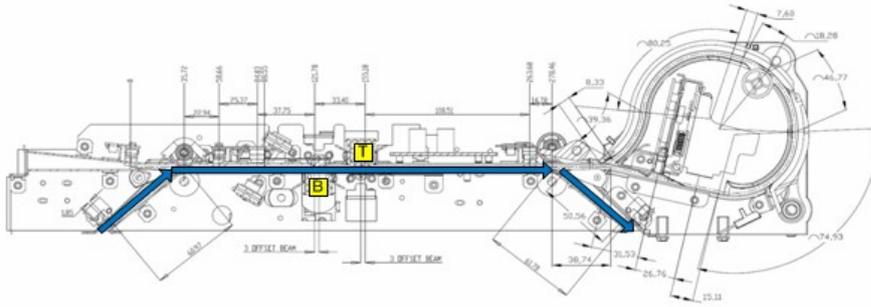
The Ballot Path (Scanning)

22.2.3 Power Failures

In the event of a power failure, the unit automatically switches to its internal battery. If the machine fails to turn on, or if the battery drains, check the connectivity and/or charge capacity of the battery. If this fails to resolve the issue, perform any of the procedures outlined below.

Faulty Main's Power Source

To identify whether the wall outlet is functional:

- Plug in any other electrical product into the outlet and check if it powers up.
    - If the other electrical product fails to power up, plug the ICE unit to another wall outlet and confirm power up.
    - If the other electrical product powers up, refer to Section Faulty or Disconnected Power Adaptor.

Faulty or Disconnected Power Adaptor

Obtain permission from an authorized Election Official to gain access to the Ballot Box in order to inspect the power adaptor.

- Check cable connectivity
- If cables are connected, measure the voltage (at the 2.5mm power pin), which should read 20V DC. If this is not the case, replace the power adapter.
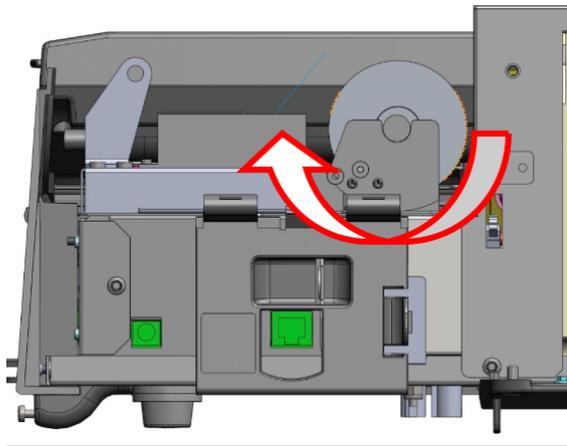- If this fails to resolve the issue, replace the unit.

22.2.4 Thermal Printer

Issues related to this printer are very minimal. The primary causes of concern are discussed below.

No Print on Thermal Paper OR Fails to Print

In order to resolve this issue, follow the check sequence below:

- Verify that the thermal paper is seated in the correct orientation in the Printer compartment. Because thermal paper can only be printed on one side, it is important that the paper roll sits such that it rolls along the Printer Compartment base surface and protrudes upwards and through the slot on the compartment door as indicated by the arrow in the figure below.

- Verify that the Thermal Printer is receiving power by checking for a green LED on the Printer mechanism. If the green LED is off, ensure that the cables are properly plugged into the printer mechanism.

- If this fails to resolve the issue, replace the unit.

Thermal Printer X-section View

Thermal Printer Prints Invalid Characters

To resolve this issue, check to ensure that the cables are plugged in properly into the printer mechanism. If this fails to resolve the issue, replace the ICE unit.
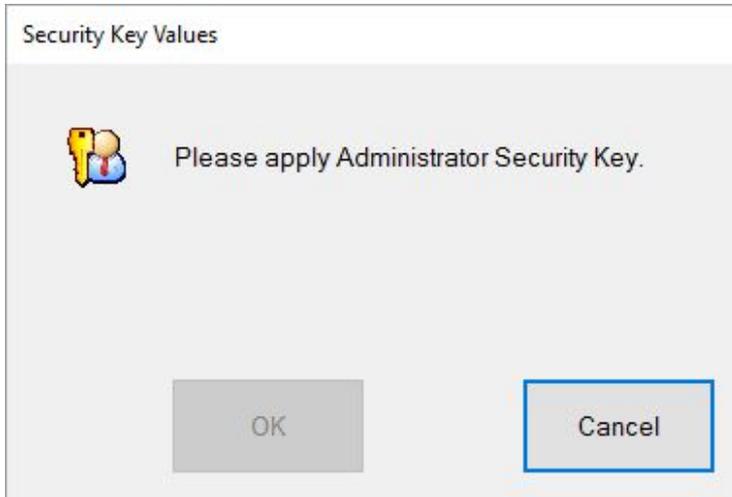
22.2.5 Touchscreen Failures

Touchscreen failures are associated with loss of calibration on the touchscreen. Common symptoms include:

- Wrong button selected when attempting to press a particular button.

- No response at screen touch.

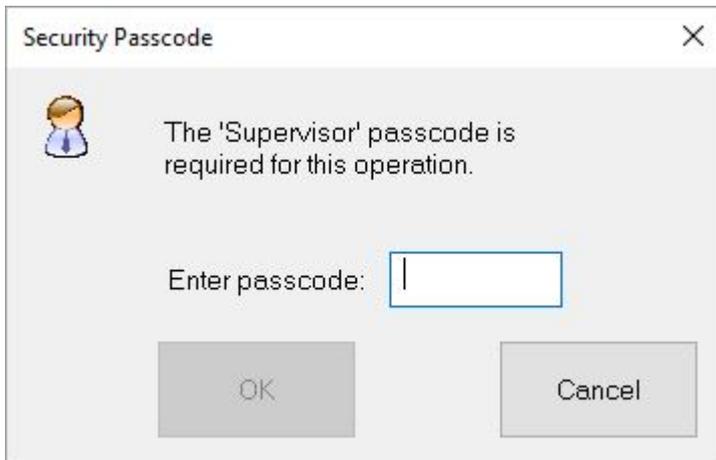# 22.3 ImageCast Central Troubleshooting

Security Key Values Prompt

This prompt indicates that you do not currently have the Administrator privileges required to display a screen or perform an action. The Administrator iButton Security Key must be inserted into the security keypad in order to gain access to administrative functions. Insert the iButton Security Key into the security keypad. A prompt asking for the Administrator password appears. This message also appears while starting up the application.
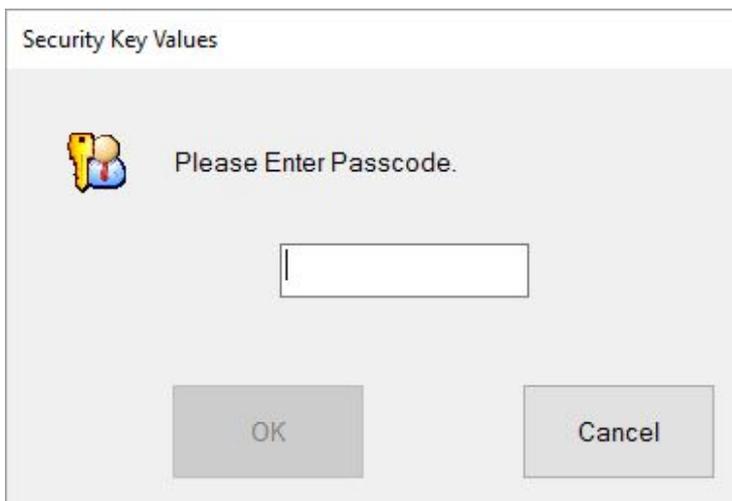

Administrator Passcode Prompt

This prompt indicates that you do not currently have the Administrator privileges required to display a screen or perform an action. The Administrator iButton Security Key should already be inserted into the security keypad when this message occurs. Enter the Administrator passcode and click **OK**.
This message also appears while starting up the application.

Supervisor Password Prompt

This prompt indicates that you do not currently have the Supervisor privileges required to display a screen or perform an action. The Supervisor iButton Security Key should already be inserted into the security keypad when this message occurs. Enter the Supervisor password and click **OK**.
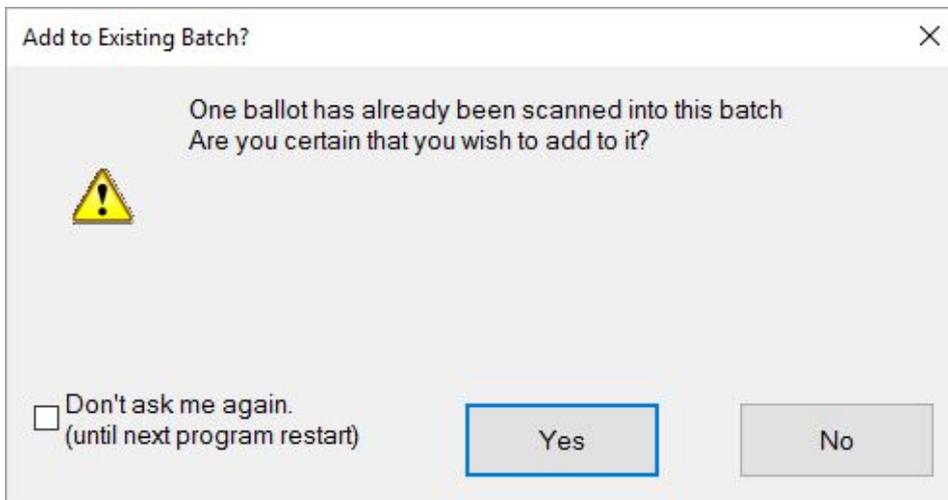
Add Ballots Prompt

This prompt will display if the user tries to scan more ballots after a batch has been completed. If it occurs after removing problem ballots, click **Yes**. Otherwise, follow jurisdiction procedures.
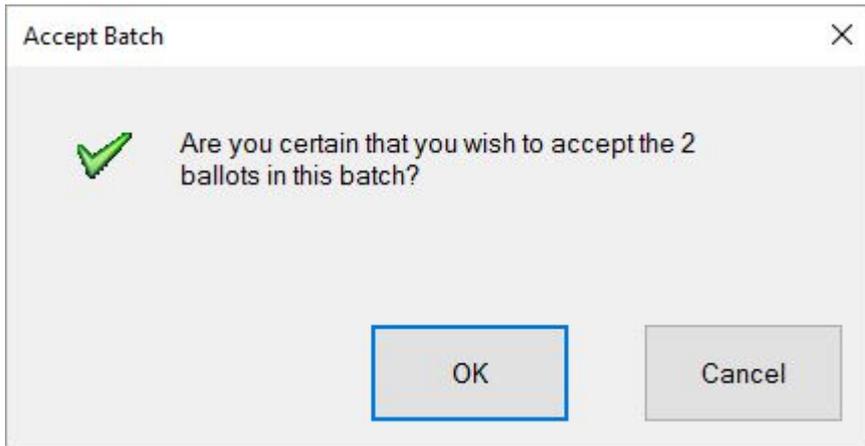
Accept Batch Confirmation

This prompt displays after the user clicks **ACCEPT BATCH** on the scanning screen. Click **OK** to accept the batch or **Cancel** to continue scanning.
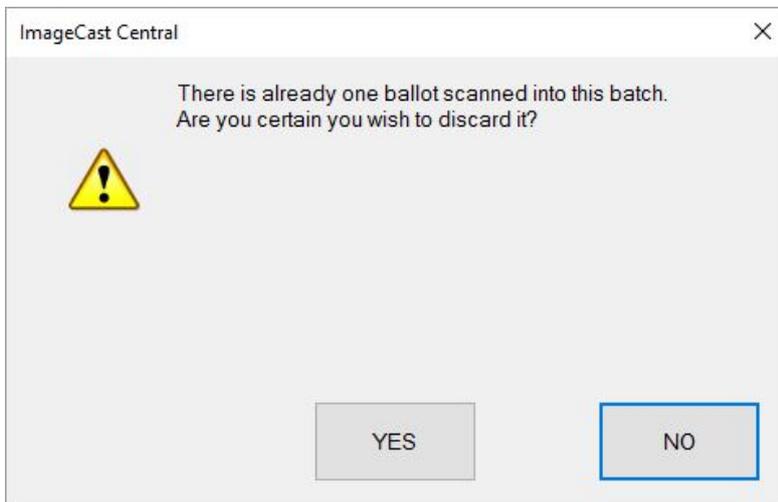
Discard Batch Prompt

This prompt displays after the user clicks **DISCARD BATCH** on the scanning screen. Click **Yes** to discard the batch or **No** to continue scanning.

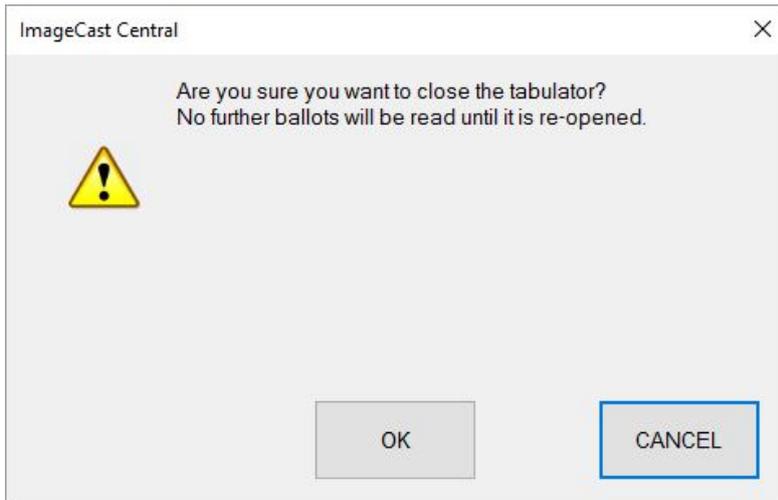Closing the Tabulator Message

This prompt displays after clicking **CLOSE TABULATOR** on the Configuration screen. If it was pressed by accident, click **Cancel** to continue scanning. Otherwise, click **OK** to close the tabulator.

NOTE: Tabulators may be reopened, however, the tabulator should not be closed until scanning is complete.
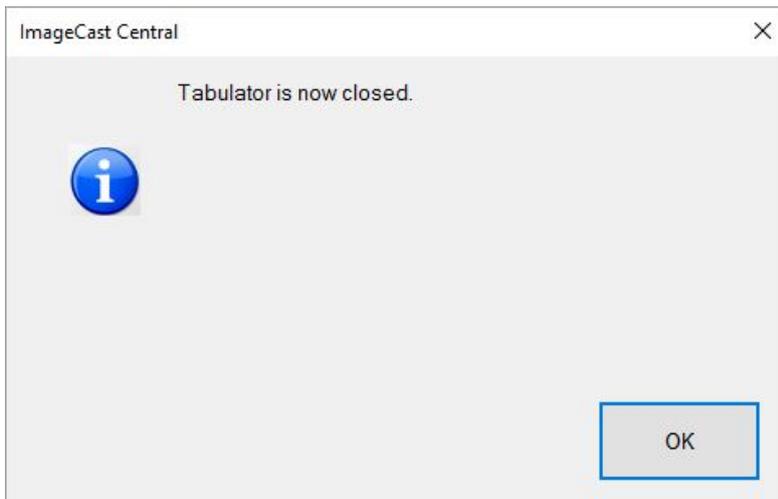
Tabulator Closed Message.

This prompt displays after pressing the 'REZERO' button on the Configuration screen and confirming your selection by pressing 'OK'. It indicates that the tabulator is not closed and no more ballots can be scanned unless it is reopened.

Resetting the Tabulator message.

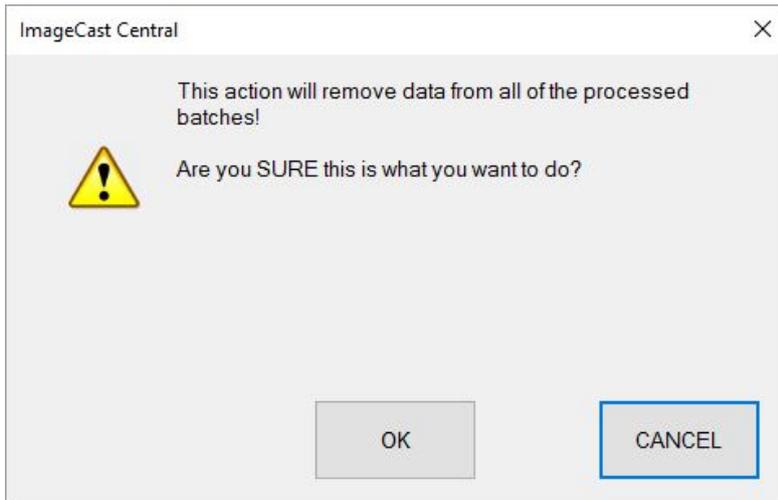This prompt displays after clicking **REZERO** on the Configuration screen. If it was pressed by accident, click **CANCEL** to continue working on the ImageCast Central application. Otherwise, click **OK** to rezero the tabulator.
NOTE: Re-zeroing the tabulator will result in the loss of all information. Any batches scanned prior to resetting the tabulator will need to be re- scanned in the next session.
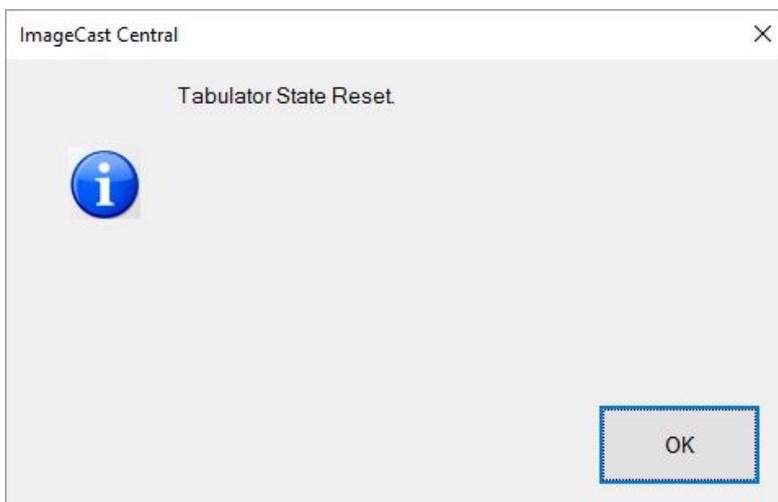

"Tabulator State Reset" Message.

This prompt displays after pressing the 'REZERO' button on the Configuration screen and confirming your selection by pressing 'OK'. It indicates that the tabulator has been reset and all information contained in all previously scanned batches has been deleted.
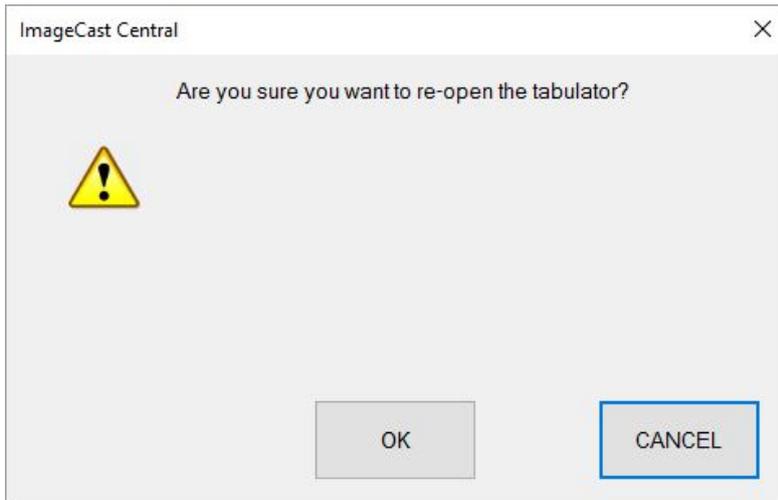
The Re-Open Tabulator Prompt.

After clicking **RE-OPEN TABULATOR**, the prompt will appear. If you wish to scan more ballots, click **OK**. If you do not wish to scan more ballots at this time, click **Cancel**.
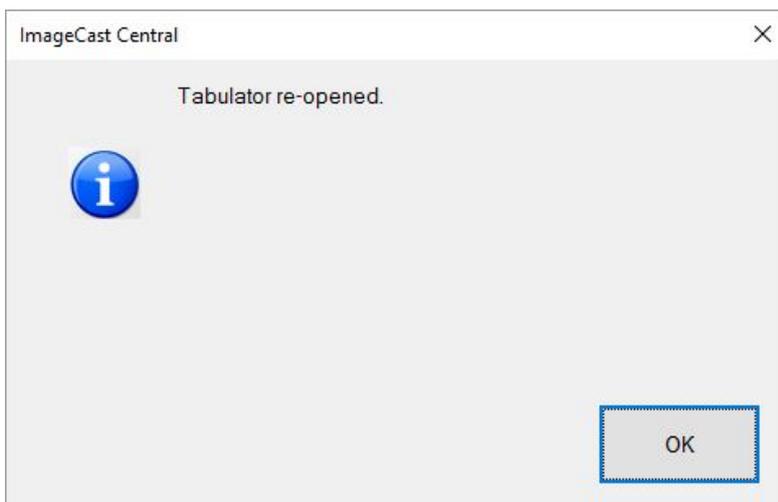
Tabulator Re-opened Message.

After clicking **RE-OPEN TABULATOR** and confirming your choice, the following message appears to indicate that the tabulator has been successfully reopened.

This screen will display after all ballots have been scanned or when the application encounters a stop flag.
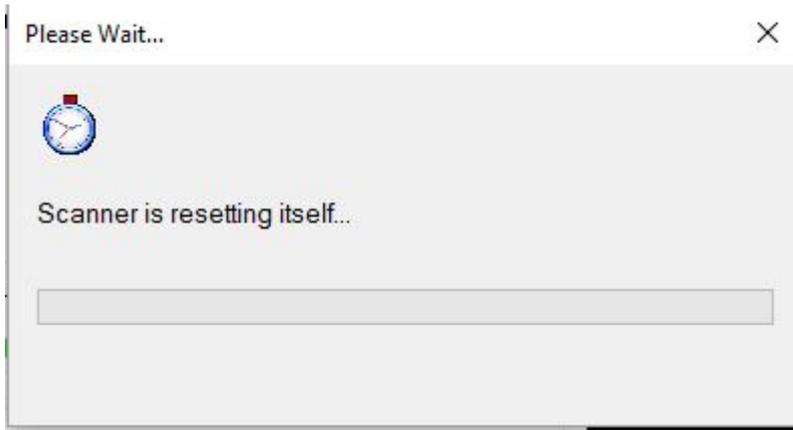
Scanner Resetting Itself Message.

This prompt displays after pressing the **EXIT** button on the left hand bar. If it was pressed accidentally, select **No** to continue scanning. Otherwise, select **Yes** to close the tabulator.

If the application is closed, results will not be saved and scanning must restart from the beginning.
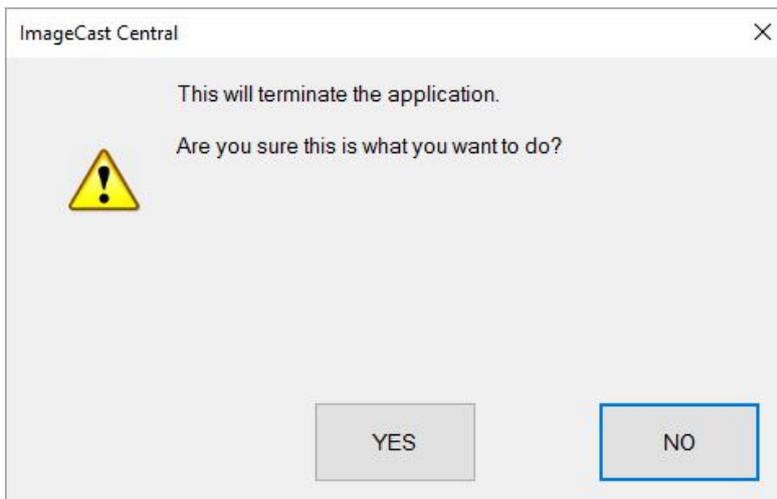
Exit Prompt.

> ⚠ If the application is closed with a open batch, results of the open batch will not be saved and scanning must restart from the beginning

22.3.1 Ballot Scanning Errors

Ambiguous Errors

> ⚠ All ballots that cause any of the ballot scanning errors listed below are saved in **C:\DVS\Project\NotCastImages** as images for further examination.

The information message indicating that 'Ambiguous' may display during scanning. It informs the user that an ambiguous mark has been detected and the number of ballots that have not been counted as a result of the ambiguous mark.
If this occurs do the following steps:

1. Close the ImageCast Central application.

2. Turn off the scanner.

3. Wait 1 minute.

4. Turn the scanner back on.

5. Open the ImageCast Central application again and resume scanning.

6. If the problem persists, please contact your Dominion Voting Representative.

Invalid Ballot Errors
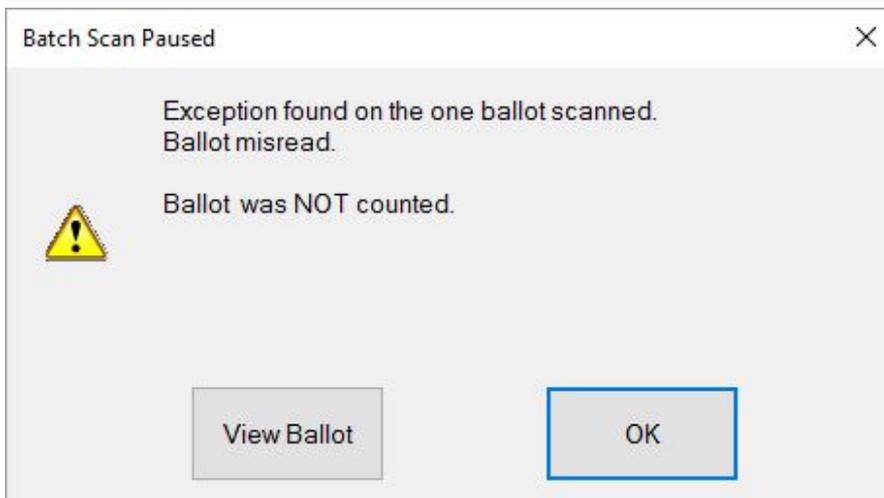
"Exception found on the one ballot scanner" Message.

This message indicates that the User has inserted a ballot not programmed to scan in the machine. Ensure that the ballot is printed on valid ballot paper and is in the correct batch.

22.3.2 Error Messages

If this message appears, either a project has not previously been loaded or the `data.meta` file is corrupt or missing.
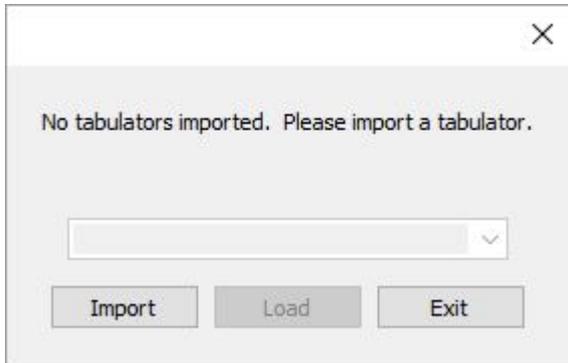
No Tabulators Imported Message.

If this message appears, you may have entered an incorrect passcode and should check with an election official to make sure you have received the right code.
If the error persists after checking the passcode, the wrong iButton Security Key may have been inserted. Please ensure that you are using the correct iButton Security Key for your device.
If the error message continues to appear, there may be a problem with your iButton Security Key and it may need to be replaced. Contact an election official or the Dominion support helpline for further information.
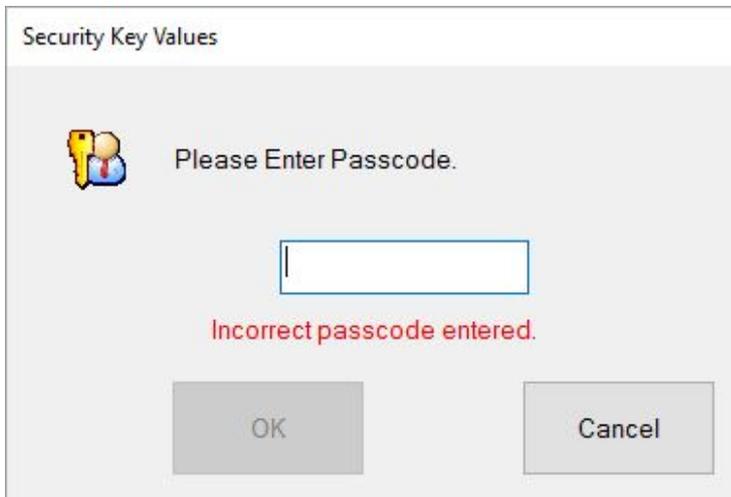
Passcode Error Dialog.

This message will display when you try to scan ballots before they have been loaded into the scanner. Click **OK**, load the ballots into the tray, and click **SCAN**.
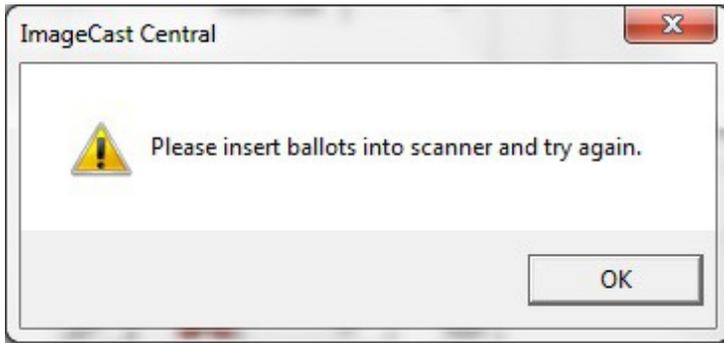
Insert Ballots Message.

This prompt displays when the scanner runs out of paper. If all ballots have been scanned, select 'Cancel'. If you wish to scan more ballots, add them to the scanner feed tray.
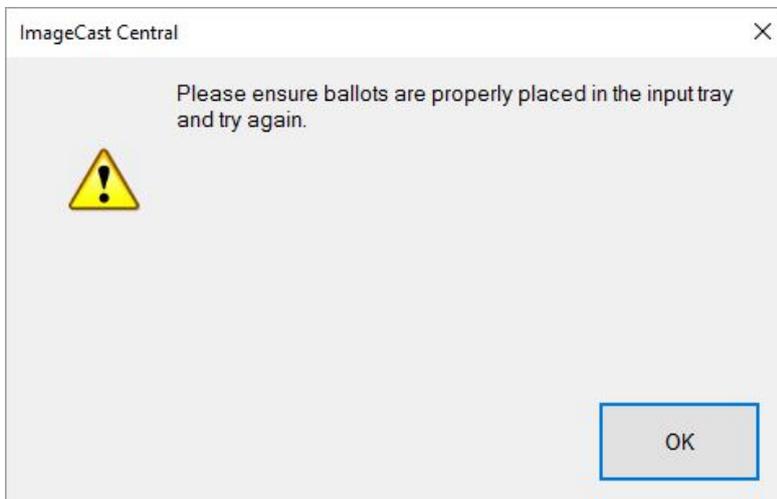
Out of Paper Message.

If you wish to access an option but the button is greyed out, you do not have the Administrator or Supervisor privileges necessary to perform this action. Insert the iButton Security Key or contact an Administrator to access these options.

The Configuration Menu in User Mode after the Tabulator is Closed.

22.4 Adjudication Troubleshooting

22.4.1 Communication with the Adjudication Service

Certain network connectivity events may prevent the Adjudication application from receiving ballots. When this occurs, communication can be restored as follows:

1. Verify that both the server and the client machine in question have a network connection. Hover over the network icon on the notification area of the Windows taskbar. This should display the message "No Internet access" below the name of the network. If this is not the case, check that the network cable is plugged in on both ends, and ask an administrator to verify that the network is functioning correctly.

2. Close and reopen the Adjudication application.

3. Verify that ballots can be received (this might take a few minutes).

4. If problems persist, restart the workstations and the server as follows:

    a. Power down the Adjudication workstations.

    b. Restart the EMS server.

    c. Wait for the EMS server to start. After successful login to the server, wait two to five minutes for the Adjudication services to start.

    d. Power up the Adjudication workstations.

22.5 EMS Troubleshooting

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

1. Start SQL Server Configuration Manager console.

2. Change 'log on as user' to **Local System** and click **Apply**.

3. Restart SQL Server Service.

4. Start SQL Server Agent service if it is available.

5. Start Computer Management console and navigate to 'Local Users and Groups'.

6. Delete the following user accounts:

   a. emssqluser

   b. emsdbusers group

7. Reboot the computer.

8. Run DCM again.

9. If the problem persists, please contact Dominion Technical Support.

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

- Make sure that all servers you are using are switched on and working, and that all network equipment (if any) is switched on and working.

- Make sure that all client computers you are using are switched on and working.

- For any problems encountered during installation, make sure you followed the installation and configuration manual for both the server and the client computers.

- Try to log in to the server you are using with the default administrator account. Open Task Manager (press **Ctrl+Alt+Delete** and click on the **Start Task Manager** button). Under the **Process** tab, make sure that no process that begins with the name "DVS" occupies 0% of CPU usage. If so, select that process and click on the End Process button at the bottom. Repeat the process, if necessary.

- Try to log in to each client computer you are using with the default administrator account.

- Open the EMS EED client application. Ensure that the entered EMS database and network settings, as well as the application user accounts, are correct. Check to see if the election event properties have been entered correctly. Create and then ensure the System and Audio Log reports are correct.

- Open the EMS RTR client application. Ensure that the entered EMS database and network settings are correct. Ensure the transfer point parameters are correct. Reboot the server and try again.

- Reboot the defected client computer(s) and try again.

- If the problem persists, please contact Dominion Technical Support.

22.5.1 Submission and Publishing of Batches

This workaround explains how to recover from an instance where the submitted batches in Adjudication show "Submission Error". When this happens, the batches will remain in the "Review" pane of the Adjudication application, with a "Submission Error" note next to the name of the batch.

The submission error problem will usually affect multiple batches of consecutive batch numbers. Note the starting and the last affected batch number.

Open the project in the RTR application and list all batches for the affected tabulator (you can find the tabulator name in the batch name in the Adjudication application). Highlight all the affected batches using the batch numbers noted in the previous step. Once the affected batches are highlighted, click on the **Reject** button.

Go back to the Adjudication application and re-submit those same batches by dragging and dropping them into the **Submitted** pane of the Adjudication application.

Go back to the RTR application and verify that the newly submitted batches are in **Published/Adjudicated** state.

22.6 ImageCast X Troubleshooting

⊙ *Any troubleshooting procedures required to be performed on Election Day*
MUST be performed in the presence and with permission of the Election Staff
on duty.

22.6.1 Power failure

In the event of a power failure, the unit automatically switches to its internal battery. Additionally, the device is equipped with a UPS that can power the unit and the BMD printer.

22.6.2 Printer paper jam

In the case of printer paper jam, consult the printer user guide.

- **HP LaserJet Pro M402dne** - http://h10032.www1.hp.com/ctg/Manual/c04639074

22.6.3 Replacing BMD printer

To replace a BMD printer on Election Day, follow the steps described below in presence of an authorized Poll Official:

1. Power off the printer
2. Disconnect the USB and power cable from the printer
3. Remove the printer
4. Place the replacement printer into the same location
5. Reconnect the USB and power cable to the replacement printer
6. Log in using a Technician Smart Card
7. Select Hardware Information to verify the printer is present. If an error occurs, start the procedure from the beginning.
8. Select Hardware Test and then Printer test
9. Print a test page to confirm the printer is working. If an error occurs, start the procedure from the beginning.
10. Remove the Technician Smart Card
11. The device is ready to receive Voter Smart Cards

22.6.4 Replacing ICX device

To replace ICX device on Election Day, follow the steps described below in presence of an authorized Poll Official:

1. Record the number of ballots displayed in the Ballot Counter.

2. If you are in the "Poll-Worker Menu" or "Tech Menu", turn off the machine by pressing the **Power Down** icon on the bottom right corner of the menu and then selecting option **Yes**. Otherwise, this step can be disregarded.

3. Disconnect the power cable, printer cable, and ATI device, if it's connected.

4. Once you have checked there are no more obstacles, remove the device from the table.

5. Place the replacement unit on the table.

6. Attach the printer cable and the ATI cable, if ATI was connected previously.

7. Plug the power cable into the device.

8. Wait for the device to power up.

9. Insert the Technician Smart Card and log in.

10. Confirm or modify the date and time.

11. Make sure the device has valid election files loaded, if not, load valid election files from a USB stick.

12. Remove the Technician Smart Card.

13. Make sure no USB sticks are in the device.

14. Close the trap doors and place the seals at the security latches.

15. Insert the Poll Worker Smart Card and

    Select the desired tabulator from drop down list.

16. Select the **Open Poll** option (in the Main Menu), and confirm the poll opening.

17. Remove the Poll Worker Smart Card.

18. The replacement unit is ready for operation. To proceed, insert a valid Voter Smart Card. Follow standard close poll procedures at the end of voting.

23 Threat Register

The following list outlines potential threats and vulnerabilities that relate to critical information assets (i.e. digital records). Only information assets that have their communication vulnerability attribute set to 'Yes' are considered for possible vulnerability exploitation.

Tampering with Election Definition

- **Description**: In addition to the EMS Database which stores election project definition in the form of a relational database, election definition is contained within the election definition files. These files are generated by the EMS platform and communicated with the target PCOS/ICC devices using memory cards. Each memory card is unique to the target PCOS/ICC instance.

- **Threat**: A malicious user decrypts, discovers, and modifies election definition files/database between file creation and ballot counting.

- **Impact**: By changing the election definition files or database, the malicious user (technician, poll worker) can make the voting system inaccurate or inoperable. Confidentiality of election data is of less concern in this case, considering that election definition data is usually publicly available information.

- **Impacted Security Pillars**: Integrity and availability.

- **Risk Rating**: High.

- **Mitigation**: Implement proper process (access control) for memory card handling and unit storage. Cryptographic and digital signing controls mitigate data tampering. This tampering would be evident to operators and voters. See Chapter 15.

Tampering with Device Configuration

- **Description**: In addition to election definition files, the EMS platform provides PCOS/ICC devices with DCFs (Device Configuration Files) in case of ICC, and MBS (Machine Behavioral Settings) files in case of ICE. These files do not carry any election project related logic, however, they are important for proper functioning of the devices.

- **Threat**: A malicious user decrypts, discovers, and modifies DCF or MBS files.

- **Impact**: By changing DCF/MBS files, a malicious user (technician, poll worker) can make a PCOS/ICC device inoperable.

- **Impacted Security Pillars**: Integrity and availability.

- **Risk Rating**: High.

- **Mitigation**: Implement proper process (access control) for memory card handling and unit storage. Cryptographic and digital signing controls mitigate data tampering. The DCF and MBS files are paired with corresponding .SHA files that are created at the time the DCF/MBS files are created. The .SHA file includes a SHA-256 value that is seeded with a Dominion private input vector. When Election Event Designer imports the DCF/MBS files into an election project, it verifies the integrity of the DCF or MBS file against its .SHA file. EED generates a SHA-256 value with the Dominion private input vector and compares that against the .SHA file. If the verification fails, Election Event Designer will refuse to import the DCF/MBS file and will display an appropriate error message indicating that the verification was not successful. As such, this tampering would be evident to operators and voters.

Tampering with Ballot Representation

- **Description**: In addition to election definition, election database, device configuration files and machine/device behavioural settings, the EMS platform provides PCOS devices (except ICC) with ballot representation files. These files represent electronic versions of paper ballots and include PNG (electronic image of the paper ballot for display presentation) and XML (coordinates of the ballot elements) files. Ballots in PDF format are not used by devices, but represent ballot format data for the mass printing of ballots. Finally, there is an audio representation of the ballot content, which is provided to the ballot counting or marking device. It is important to note that these ballot presentations are used only when PCOS devices provide AVS capabilities.

- **Threat**: A malicious user decrypts, discovers, and modifies ballot representation files.

- **Impact**: By changing ballot representation files, a malicious user (technician, poll worker) can make a PCOS/ICC device inaccurate. Confidentiality of election data is of less concern since election definition data is usually publicly available information.

- **Impacted Security Pillars**: Integrity.

- **Risk Rating**: Medium.

- **Mitigation**: Implement proper access control measures for memory card handling and unit storage. Cryptographic and digital signing controls mitigate data tampering. This tampering would be evident to voters

Tampering with iButton Security Keys

- **Description**: iButton Security Keys represent secure electronic tokens used to activate administrative functions of the voting device (open poll, close poll, diagnostics, start accessible vote session, etc.). The iButton Security Keys carry electronic representation of the administrative poll worker password.

- **Threat**: A malicious user decrypts, discovers, and uses iButton Security Key content.

- **Impact**: By discovering the content of the iButton Security Key, a malicious user (technician, poll worker) can activate administrative operations on the device. The likelihood of this action is low because the malicious user would also have to know the password to access the iButton Security Key content.

- **Impacted Security Pillars**: Integrity, Availability.

- **Risk Rating**: High.

- **Mitigation**: Implement proper process (access control) for iButton Security Key handling and storage. Cryptographic and digital signing controls mitigate data tampering. This tampering would be evident to operators and voters.

Tampering with Device Audit and Log Reports

- **Description**: During the voting session, PCOS/ICC devices constantly keep and update audit and log reports. These reports are important for the analysis of the system functions and also for the audit process.

- **Threat**: A malicious user decrypts, discovers, and modifies the content of the audit and log reports.

- **Impact**: This threat is more likely to occur in combination with some other threats (like voting results tampering) with the main goal to cover up any malicious actions.

- **Impacted Security Pillars**: Confidentiality and integrity.

- **Risk Rating**: Medium.

- **Mitigation**: Implement proper process (access control) for memory card handling and unit storage. Cryptographic and digital signing controls mitigate data tampering. This tampering would be revealed during auditing.

Tampering with Scanned Ballot Images

- **Description**: During the voting session, PCOS/ICC devices constantly record images of the scanned paper ballots. It is important to state that in paper based voting systems, such as PCOS/ICC platforms, a paper trail of the ballots always exists in the form of the original paper ballots.

- **Threat**: A malicious user decrypts, discovers, and modifies scanned ballot images.

- **Impact**: This threat is more likely to occur in combination with some other threats (like vote results tampering) with the main goal to cover up any malicious actions.

- **Impacted Security Pillars**: Confidentiality and integrity.

- **Risk Rating**: Medium.

- **Mitigation**: Implement proper process (access control) for memory card handling and unit storage. Cryptographic and digital signing controls mitigate data tampering. This tampering would be evident to operators

Tampering with Election Result Files

- **Description**: Election result files hold the up-to-date raw and tabulated (per voting device) voting results and it is imperative to protect their content.

- **Threat**: A malicious user decrypts, discovers, and modifies election result files, and, within the proper chain of custody, replaces the valid memory card with a tampered card produced by the ballot counting device.

- **Impact**: By changing these files, a malicious user would jeopardize the whole election event.

- **Impacted Security Pillars**: Confidentiality and integrity.

- **Risk Rating**: High.

- **Mitigation**: Implement proper process (access control) for memory card handling and unit storage. Chain of custody for memory cards with results as well as cryptographic and digital signing controls mitigate data tampering. This form of tampering is immediately evident when the voting machine paper record (printout) is compared to the memory card results.

Tampering with Transmitted Election Result Files

- **Description**: Election result files hold the up-to-date raw and tabulated (per voting device) voting results and it is imperative to protect their content.

- **Threat**: A malicious user decrypts, discovers, and modifies election result files, before, during, or after transmission, and, within the proper chain of custody, replaces the valid results with those that have been tampered with.

- **Impact**: By changing these files, a malicious user would jeopardize the whole election event.

- **Impacted Security Pillars**: Confidentiality and integrity.

- **Risk Rating**: High.

- **Mitigation**: Implement proper cryptographic signing controls to detect tampering. This form of tampering is immediately evident when the voting machine paper record (printout) is compared to the tampered results.

Tampering with EMS Data Center Environment

- **Description** physical or logical destruction of the EMS Data Center equipment.

- **Threat**: Due to unexpected or intentional activities, prior or after the election night (i.e. during election preparation or during the results tally), EMS Data Center equipment could become inoperable.

- **Impact**: Postponing the election event preparation and/or result processing and reporting.

- **Impacted Security Pillars**: System availability.

- **Risk Rating**: Medium.

- **Mitigation**: Proper redundancy and backup procedures for hardware, software and data should be in place to mitigate the risk from intentional or unexpected destruction of the EMS Data Center equipment.

Tampering with Election Database

- **Description**: Logical destruction and/or alteration of EMS Database content or structure.

- **Threat**: A malicious attacker can try to infiltrate the EMS Database system to perform the destruction or alteration of the election data prior, during or after voting. This can be done remotely or internally if attacker has help from an insider. In this case, the validity of the election event becomes questionable.

- **Impact**: Invalidation of the election event.

- **Impacted Security Pillars**: Data integrity, data confidentiality, access control.

- **Risk Rating**: Medium.

- **Mitigation**: Proper design of the underlying election software and hardware shall prevent or detect this type of attack. In case of Democracy Suite, all in-transit data is encrypted and signed, while the database platform implements per-record signing of data using atomic triggers with every transaction. Coupled with auditing mechanisms, this approach prevents and detects any attempt to break into the database.

Producing Incorrect Vote Counts

- **Description**: Attacker gains access to the results acquisition and tally computing platform, and changes the voting results.

- **Threat**: Depending on the skill set and level, the attacker can try to break into the result acquisition and tally system directly or remotely and change the votes. This can happen after the results have been imported into the system but before persisting the results into the election results database.

- **Impact**: A successful attack of this type would produce erroneous and invalid election results and invalidate the whole election event. An attack of this type would require a high level of computing skills and usually involves internal jurisdiction personnel or a vendor technical team.

- **Impacted Security Pillars**: Access Control, Data Integrity and Data Confidentiality.

- **Risk Rating**: High.

- **Mitigation**: As stated earlier, this type of attack would require that the attacker has significant level of technical skills and knowledge of the system. In addition, if all the access control and data security measures were followed together with the system hardening procedures, this type of attack would require that attacker has helpers either within the jurisdiction or from vendor technical team. Therefore, to mitigate this type of attack it is important to follow the best security practices including access security, physical security, IT system security and auditing (including monitoring), data integrity and confidentiality.

Tampering with EMS System Availability

- **Description**: Make EMS Data Center and its computing components unusable for either pre-voting or post-voting activities.

- **Threat**: In this case the attacker performs a destructive action either by direct manipulation of the EMS Data Center system components or by installing malicious software components that will make EMS Data Center components inoperable.

- **Impact**: If the EMS Data Center components are not operational or not capable of performing their set of predefined activities, the jurisdiction either will not be able to organize the election event or to tally and report election results.

- **Impacted Security Pillars**: System availability.

- **Risk Rating**: Medium.

- **Mitigation**: Proper access control and physical security shall prevent physical and logical destruction of the EMS Data Center system. Proper availability and disaster mitigation and operation continuation procedures shall be implemented. Primary, redundancy from hardware and data backup from software/data point of view must be in place.

Tampering with Tabulator System Availability

- **Description**: Prior or during the voting phase, voting devices become inoperable or not capable of processing ballots.

- **Threat**: The attacker can either perform physical destruction (in a warehouse or in transit) or logical destruction (install malicious software on the machine) of the device causing a denial of service type of an attack. Logical destruction of the device could not only cause the alteration of election data including votes), but could also cause a slow down of the system operation.

- **Impact**: System becomes unavailable for voting.

- **Impacted Security Pillars**: Data integrity, access control, availability.

- **Risk Rating**: Medium.

- **Mitigation**: Proper physical security controls prevent the physical destruction of the voting equipment, while the proper software security measures (code signing, data signing and encryption) prevent the attacker from breaking into the device and making it inoperable for election event.

Tampering with Ballot Secrecy

- **Description**: Attacker influences how voters will vote by breaking the ballot secrecy.

- **Threat**: The attacker is usually unable to influence voting directly, but might still be able to determine how individuals or groups voted. The attacker might engage in either vote buying or information gathering. In a vote buying attack, the attacker pays or threatens individual voters to vote in a specific way. In order for this attack to be successful, the attacker needs to be able to verify how the voter voted. *Note: the attacker does not need to be absolutely certain how the voter voted he/she must only make the voter believe that the voters vote has a good chance of being verified.*

- **Impact**: Attacker can achieve a limited success and influence on the election results.

- **Impacted Security Pillars**: Privacy, Confidentiality.

- **Risk Rating**: Medium.

- **Mitigation**: By implementing advanced ballot security mechanisms and by following the best information security practices, including the education of personnel and voters, the scope of this type of an attack can be drastically minimized. If voters and jurisdiction have sufficient knowledge about the system as well as trust in the security controls implemented into the system, an attacker will have a difficult task to influence how voters vote. If the external enclosures of the servers you receive allow for tamper-evident sealing via a hasp, utilize a "redwire" or lock style tamper-evident seal to provide tamper evidence over intrusion into the wrokstation chassis. A lock is another possibility when the server has hasps. If no hasps are present, examine the server's enclosure and chassis to determine places where these separate when the server is opened. Apply two or more tamper evident seals, prefer ably at points opposite to one another on the workstation chassis to provide tamper evidence of the workstation being opened.

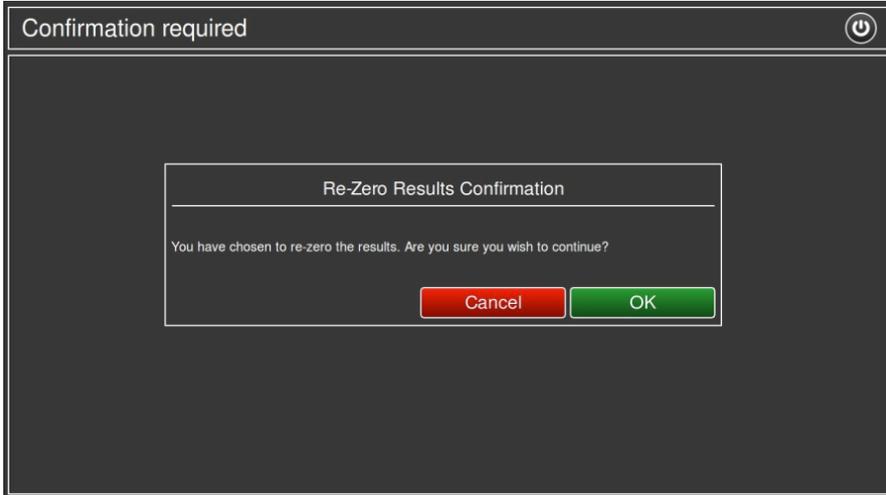# 24 Physical Security of Democracy Suite System and Components

The Democracy Suite System and all of its components must be physically secured in a locked area with security access controls in place. No access to this area should be permitted to unauthorized personnel. The jurisdiction must provide a secure physical and procedural environment for the storage, handling, preparation, and transportation of the system hardware. Procedural and physical controls for ballot boxes and ballot handling in a central scanning application scenario should be done in accordance with jurisdiction's and State requirements.

24.1 Re-Zero Results Using the Advanced Admin Option
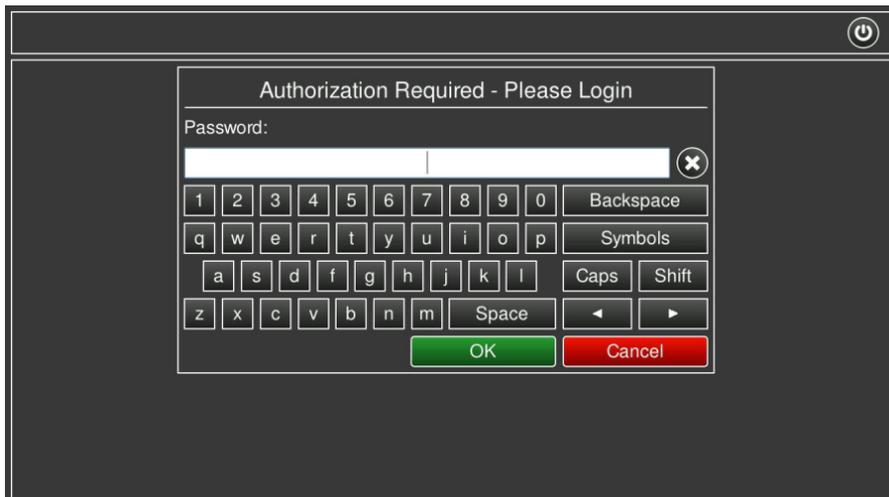
1. If the election cards have been used for testing prior to the election day (during Logic and Accuracy testing procedure) then all the recorder results need to be set to zero.

2. On the Poll Worker Menu screen, press the Advanced Admin option. Re-zero Results menu will appear in the right- side of the screen.

3. Depending on the configuration set in the MBS file, you may be asked to provide a username and password, password only when entering the Advanced Admin menu. In addition, the MBS gives an option to omit the authentication. Next, Re-zero Results menu appears. Press Re-zero button.

4. When prompted, enter the credentials (the poll worker's credentials are set in EMS EED client application).

5. The Confirmation screen will appear asking for the confirmation to set the results to zero. Press OK to proceed.

6. Finally, Poll-Worker main screen will be presented. On the activity bar, the Ballot Counter indicates that the results are zero.
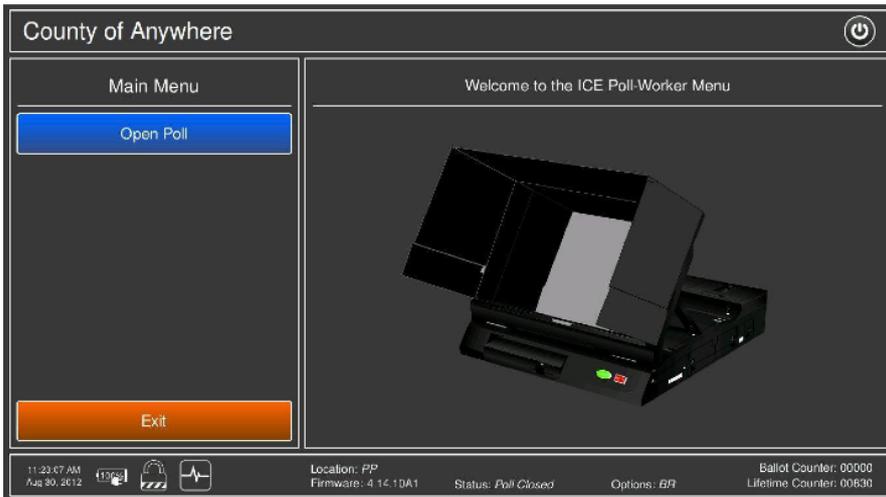
24.2 Physical Security

The physical security on the Democracy Suite system and its components is supplemented by security seals that are applied as summarized in the table below.

NOTE: The brand, type, and color of all seals may vary. Seals should be evaluated for functionality prior to deployment.

Color	Purpose
White self-adhesive enclosure seals	Applied on the ImageCast Evolution 's CF0 door in the warehouse and left intact by the poll worker. Also used on workstations.
White or Red wire seals on the ballot box	Two are applied on the ImageCast Evolution latch, and two on the ballot box lid latch. Semi-permanent/not broken.
Red padlock seal	To remain on the system and components throughout the election cycle.
Yellow padlock seal	To be removed by the poll worker once the polls are closed, or as required, in order to remove CF cards.
Green padlock seal	To be removed by the poll worker to remove the ballot box cover.

24.3 Plastic Ballot Box Physical Security

The plastic ballot box is physically secured by seven color-coded security seals, and five locks.

Ballot Box Security Seals		
Quantity	**Color**	**Location**
3	Yellow	Primary Compartment Door, Secondary Compartment Door, Auxiliary Compartment Slot
2	Green	Front of the ballot box lid, back of the ballot box lid
2	Red /White	Tabulator latches

Ballot Box Security Locks	
Quantity	**Location**
2	Each side of the ballot box lid
1	Auxiliary Compartment Slot
1	Primary Compartment Door
1	Secondary Compartment Door

The following figures shows the location of the Green security seal on the front of the ballot box lid, the Yellow security seal on the Primary Compartment Door, and the locations of two locks – one on the side of the Ballot Box Lid, and one on the Primary Compartment Door.

Next figure illustrates Security Seals applied on the inside of the auxiliary bin.

Plastic Ballot Box Security Seals located inside the auxiliary bin

In addition, two white wire seals are applied to the ballot box lid latches.

Ballot Box Lid Latches		
Quantity	**Color**	**Location**
2	White wire seals	Ballot box lid latches

The following figures illustrates the location of the white wire seals that are applied to the internal latches that lock the lid of the ballot box to the ballot box bin.

Ballot Box Security Seals

24.4 ImageCast Evolution Physical Security

The following figure shows the location of the Yellow security seals on the CF1 Door and Thermal Printer Compartment Door, and the Red security seals on the CF2 Door, Ports Door, Internal Printer Door.

ImageCast Evolution and Security Seals

The ImageCast Evolution is physically secured by five color-coded security seals.

ImageCast Evolution Security Seals		
No.	**Color**	**Location**
2	Yellow	CF1 Door, Thermal Printer Compartment Door
3	Red	CF2 Door, Ports Door, Internal Printer Door

NOTE: Some jurisdictions may wish to remove the CF2 card from the CF2 door upon close of polls. In this case, the CF2 Door should be tagged in yellow.

ImageCast Evolution Security Seals		
No.	**Color**	**Location**
1	White self- adhesive seal	CF0 Door

The following image (ImageCast Evolution and Security Seals) depicts the location of the white self-adhesive seal that is applied over top of the CF0 door. The CF0 door is located behind security plating and below the CF1 and CF2 doors. This seal is applied once in the warehouse after the initial firmware installation and is not removed.

All gaps between the ImageCast Evolution 's doors and main shell are minimized to prevent access.

Each CF card door audibly clicks into place to confirm that it has been fully closed. To open the door, a thumb clasp is actuated on the left edge of the door. Locking mechanisms deploy hasp-type mechanisms. The metal loop is mounted to an internal metal component. When the door closes, loop provides a location to attach the security seals.

ImageCast Evolution and Security Seals

24.5 ImageCastCentral Physical Security

Procedural and physical controls for ballot boxes and ballot handling in a central scanning application scenario must be done in accordance with jurisdiction's and State requirements.

Seal the external enclosures of the ImageCast Central All-in-One workstation with tamper evident self-adhesive security seals, as seen in the following image.

Examine the workstation's enclosure and chassis to determine places where these separate when the workstation is opened. Apply two or more tamper evident seals, preferably at points opposite to one another on the All-in-One to provide tamper evidence of the workstation being opened.

24.6 EMS Server and Workstation Physical Security

The Democracy Suite EMS environment must be physically secured in a locked area with security access controls in place. No access to this area should be permitted to unauthorized personnel. Your State Election Authority may require that an access control system is utilized that will automatically log and record each individual's access to the EMS Datacenter environment. Such systems include the use of electronic passes or biometrics to gain entry into the secure area. In addition, if cameras and/or card-key system are not in use, all personnel must be required to sign in and out when accessing the secure Democracy Suite EMS environment area. The access log should, at a minimum, include such items as:

- Name
- Organization
- Purpose of access
- Date
- Time in
- Time out
- Signature

Seal the external enclosures of the EMS laptop workstation with tamper evident self-adhesive security seals, as seen in the following figures.

Examine the workstation's enclosure and chassis to determine places where these separate when the workstation is opened. Apply two or more tamper evident seals, preferably at points opposite to one another on the workstation to provide tamper evidence of the workstation being opened.
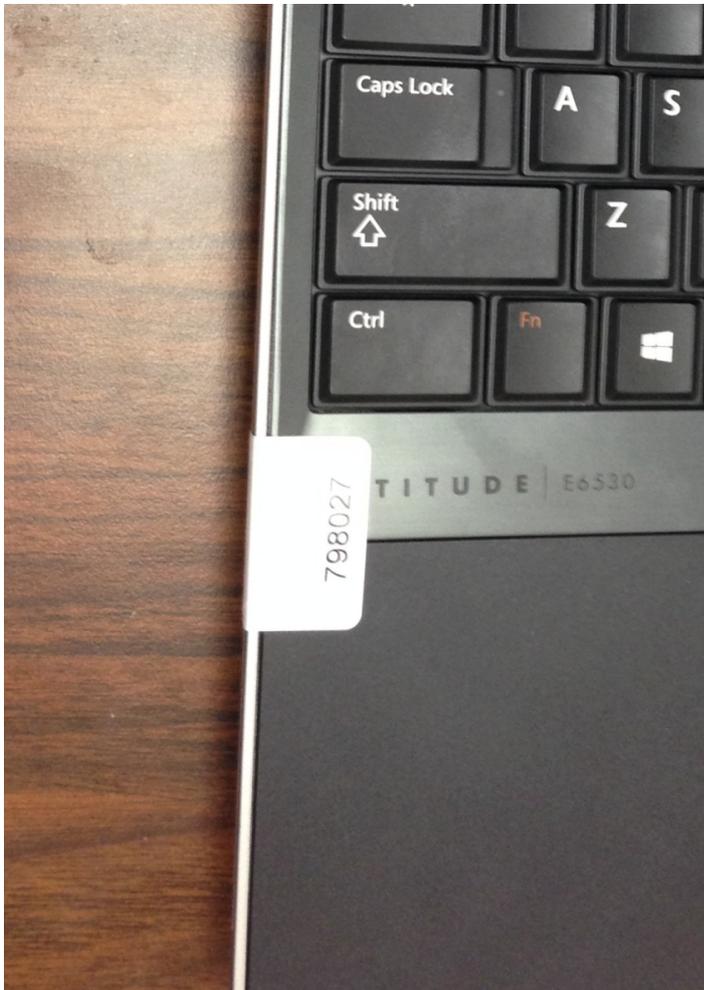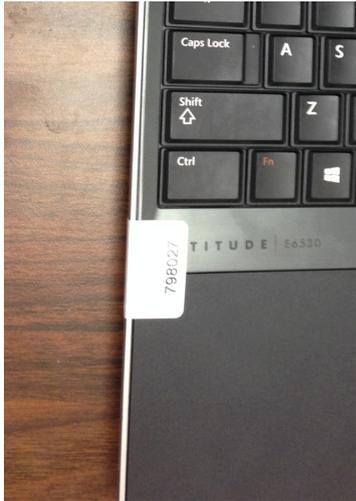
Self-Adhesive Security Seal on the EMS Laptop Workstation

All server components of the EMS Datacenter back-end system have built-in intrusion detection systems. On one side, the server chassis has an intrusion switch, which is connected to a motherboard intrusion jumper (two-wire interface). The intrusion alarm is activated if the chassis cover is open and recorded by the supported server monitoring application.

NOTE: If the laptop is equipped with laptop lock functionality, you may use third party locks to secure the workstation to a desk. It is recommended that locks are evaluated for functionality prior to deployment.

Lockable EMS Server Cover

24.7 ImageCast X Physical Security

ImageCast X is equipped with two security latches that must be secured using plastic security seals in addition to adhesive anti-tamper seals. Use seals (color of your choice - in this example we are using blue seals) for sealing top and bottom trap doors.

Figure 5: Top security latch plastic seal

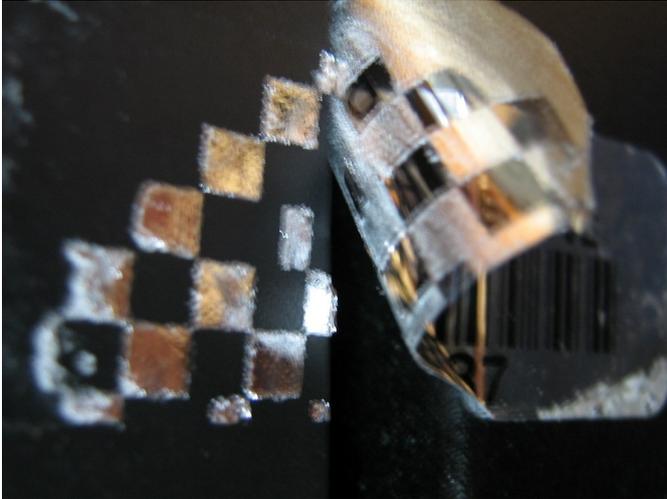Figure 6: Bottom security latch plastic seal

Figure 7: Evidence of tampering adhesive seal

24.8 Reset the Number of Printed Ballots on ImageCast X

1. Make sure the device is on

2. Log in Using a Poll Worker Smart Card

3. Make sure the poll is closed,

    a. If the poll is not closed, select "Close Poll" option

4. Select option "Reset" next to "Public Counter"

25 Permanent Printed Reports

The following sections outline the reports generated on the ImageCast Evolution thermal printer.

25.1 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.

25.2 Zero Report

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

- Lists the name and details of the election,

- Lists the date and time when the report was generated,

- Lists all of the candidates and their vote totals, by contest, ballot, or by precinct.

The LCD offers the option to print additional copies of the report to ensure that the user receives a successful copy. Please note that the default number of precincts on a zero report is set to twenty five. However, this value can be decreased within the DCF or MBS file should the election content breach the length of a roll of thermal printer paper. Should the printer roll deplete during printing:

1. Change the printer roll.

2. Press **RESUME** on the LCD screen.

3. The printer will:

   - Print a line indicating that the printer was interrupted.

   - Re-print the Zero Report's header.

   - Print a line indicating that the report is continuing on a new 'Tape Section'.

Resume printing the report from approximately two lines prior to the previous roll's depletion.

25.3 Interrupt Report

If any sort of failure occurs (such as power or other errors), the device can be returned to the same operating condition that existed immediately prior to the error or failure without loss or corruption to the voting data stored in the device. The interrupt report is generated when the unit is powered up successfully with processed ballots. The report:

- Lists the name and details of the election

- Lists the date and time when the report was generated

- Total number of ballots processed

There is no information reported about any contest as the poll has not yet been closed. The LCD offers the option to print additional copies of the report to ensure that the user receives a successful copy.

25.4 Results Report

The results report is generated when the 'Poll Close' action is selected. The report contains the:

1. Name and details of the election

2. Date and time of when the report was generated

3. The order of candidates as they appear on the results tape, which is set in the DCF or MBS options via EMS. Candidates listed on the reports can either be listed by the number of votes for each candidate in each contest, by precinct, or by the ballot order (i.e. in the same order as they appear on the ballot)

4. Election totals

Should the printer roll deplete during printing:

1. Change the printer roll by following the steps outlined in section Changing the Printer Paper Tape.

2. Press **RESUME** on the LCD screen.

3. The printer will:

- Print a line indicating that the printer was interrupted.

- Re-print the Result Report's header.

- Print a line indicating that the report is continuing on a new 'Tape Section'.

- Resume printing the report from approximately two lines prior to the previous roll's depletion.

- The LCD offers the option to print additional copies of the report to ensure that the user receives a successful copy.

25.5 Status Report

The election statistics report contains the following:

- Tabulator Name

- Tabulator ID

- Voting Location

- Precinct Number

- Total Ballots Scanned

- Total Voters

- Unit Model

- Unit Serial Number

- Software Version