

Democracy Suite[®] ImageCast[®] Adjudication User Guide

Version: 5.17-CO::3

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CHAPTER 1: INTRODUCTION

ImageCast® Adjudication is a client and server application used to review and adjudicate vote results from ImageCast® tabulators. The application uses tabulator result files and scanned images to allow election administrators to make adjudications to ballots with auditing and reporting capabilities.

ImageCast® Adjudication examines such voter exceptions as overvotes, undervotes, blank contests, blank ballots, write-in selections, and marginal marks.

The application works in two basic modes: election project setup and adjudication. Standard adjudication users only have the ability to adjudicate ballots; while adjudication administrator users have additional capabilities, such as viewing configuration settings and generating reports.

The application supports all ImageCast® tabulators and can be used in a multi-client environment. ImageCast® Adjudication eliminates the need to physically rescan ballots, which can potentially damage the originals and cause chain-of-custody concerns.

1.1 Relevant Disclaimers

This document may make reference to certain Democracy Suite functionalities that are not part of the current 5.17-CO campaign and should be disregarded throughout the document.

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

CHAPTER 2: PROJECT SETUP WIZARD

The ImageCast® 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.

2.1 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:

- Click the applicable project name, see Figure 2-1.
- Click **Next**.
- The wizard will advance to the Security Key Setup page.

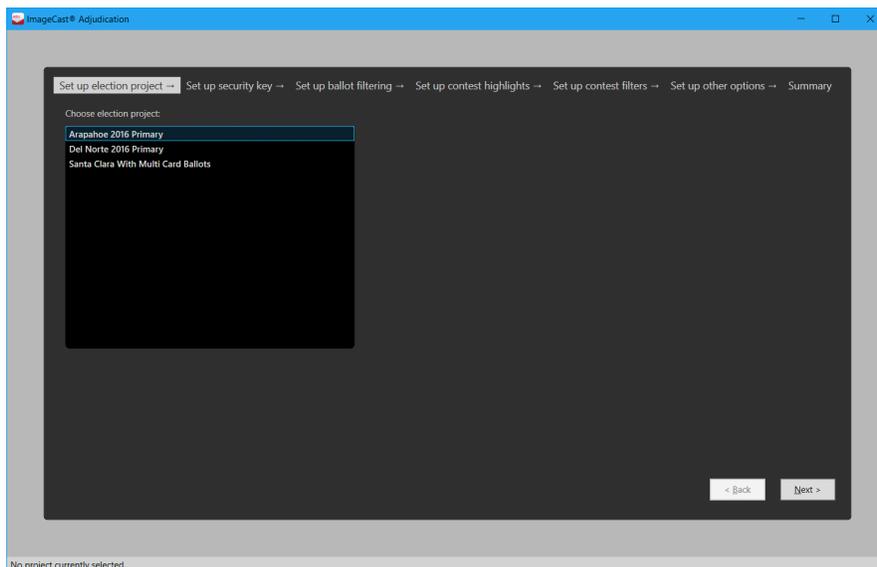


Figure 2-1: Project Selection screen

2.2 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 (Figure 2-2) highlights these projects in green and allows resuming setup, or adjudication, on them.

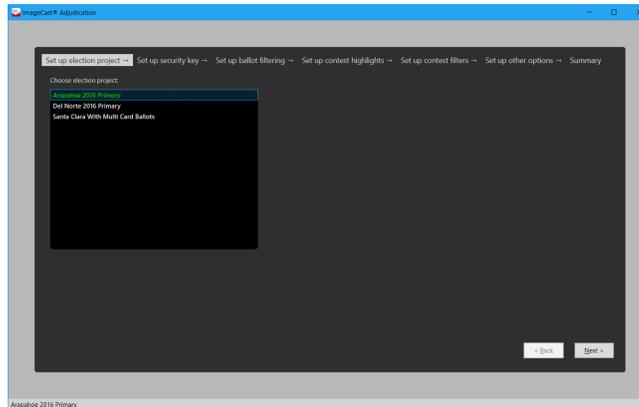


Figure 2-2: Existing Session Setup screen

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, see Figure 2-3.

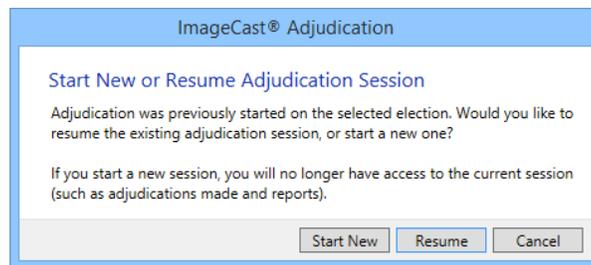


Figure 2-3: Start New or Resume Adjudication Session

- Click **Start New** to start adjudication from the beginning.

- Click **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.

2.3 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, as shown in Figure 2-4.

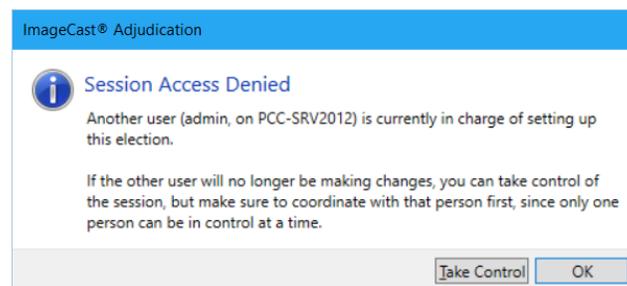


Figure 2-4: Session Setup Access Denied screen

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 Figure 2-4.

To take control of a setup session:

- Select the election project on which you want to take control and click **Next**.
- When the Session Access Denied message appears, select **Take Control**.
- 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.

2.4 Security Key Setup

The Security Key Setup screen allows the user to set up a key that the system uses to communicate securely and prevent unauthorized access. The user can choose to keep the currently installed key, create a new one, or install an existing one, see Figure 2-5. Note that this step will only allow changing the key if the administrator

is running the application on the server. Remote administrators (running on machines other than the server) will only see information about the currently installed key, but will not be able to change it. However, in most cases, the key should only need to be changed once per election. After this, remote administrators can run through the wizard as many times as necessary, without having to change the installed key.

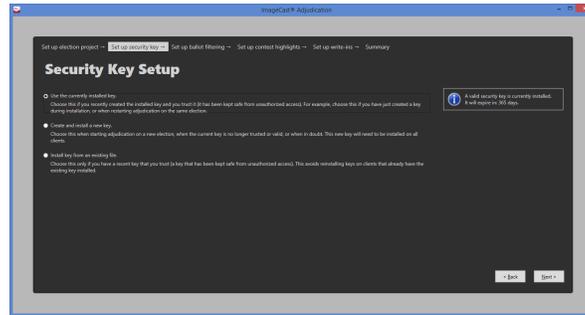


Figure 2-5: Security Key Setup screen

2.4.1 Use the Currently Installed Key

Choose this option if the installed key is relatively recent, or at least not close to expiring, and you trust that only authorized administrators have had access to it. Specifically, if you have reason to believe that unauthorized persons might have the key installed (e.g., because they were previously authorized), or that they might know the key's password, then you should not use the installed key and you should create a new one instead. Creating a new key invalidates the previous one and effectively denies access to unauthorized persons.

Otherwise, using the currently installed key is appropriate. For example, it's normal to choose this if the key was just created during installation, when resuming adjudication on the same election, or when testing the system.

To choose this option, simply select it and click **Next**. No changes will be made to the installed key and the wizard will advance to the next screen.

2.4.2 Create and Install a New Key

As specified in the previous section, you should always choose this option when the key is close to expiring, or when the key is no longer trusted. Additionally, it's best to err on the side of caution and choose this option when you are not sure about whether to trust the key, or when starting adjudication for a new election cycle.

When a new key is created, it needs to be installed on all adjudication machines. After changing the key on the server, opening the application on other machines will automatically show the option to install the new key (see section Security Key Validation).

To create and install a new key:

1. Click **Install Key** after selecting **Create** and install a new key.
2. Click **Yes** in the User Account Control prompt that will be shown. The Security Key Installation window appears.
3. Specify where to save the new key by either clicking **Save As** or by manually entering a file path. It's recommended to save the key file to a removable USB media that can then be used to install the key on remote client machines, as well as for subsequent safe keeping.
4. Enter a new password for the key and confirm it. Then click **Install**.
5. A confirmation message stating "Key Installation Successful" appears. After clicking **OK**, the application will shut down.
6. Restart the machine.

2.4.3 Install Key from an Existing File

This option is mainly intended for special cases where a previously created key may need to be installed. For example, you would choose this if a new key was mistakenly installed and you need to revert to the previous key (thus avoiding reinstalling the key on all clients that have the previous key installed).

Again, as specified in previous sections, this option should only be chosen if the key to be installed is recent and it's trusted.

1. Click **Install Key** after selecting Install key from an existing file.
2. Click **Yes** in the User Account Control prompt that will be shown. The Security Key Installation window appears.
3. Specify the location of the existing key file by either clicking **Browse** or by manually entering the file path.
4. Enter the key's password, then click **Install**.

5. A confirmation message stating “Key Installation Successful” appears. After clicking **OK**, the application will shut down.
6. Restart the machine.

2.4.4 Security Key Validation

Whenever the ImageCast® Adjudication client starts, it verifies that a valid security key is installed. If this verification fails, a warning will be shown, as shown in Figure 2-6.

It’s normal to see this warning after installing a key on the server as specified in the previous sections. It gives an administrator the opportunity to update the key currently installed on the machine. The warning will also be shown when the user that started the application has not been added to one of the Adjudication groups, meaning that the user does not have authorization to use the key.

Other than the above, this is the warning that will be shown to any person attempting to use the application without authorization, that is, using an invalid key or no key at all.

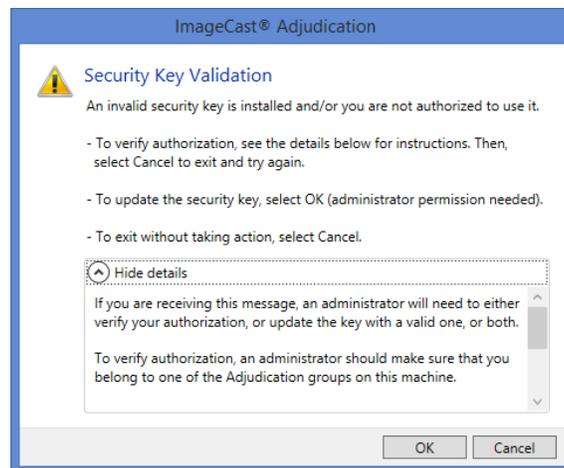


Figure 2-6: Security Key Validation screen

The security key validation message can be dismissed by clicking **Cancel**, which closes the application without allowing access.

To gain access, a non-administrator user must contact an administrator. To allow access, an administrator would take either or both of the following actions:

- **Verify authorization:** This is done by making sure that the user running the application belongs to one of the Adjudication groups on the machine, and then, reopening the application to try again.

- **Update the security key:** This is done by clicking **OK** on the warning dialog, see Figure 2-7, which shows the security key set up screen, where a new or existing key can be installed as specified in previous sections.

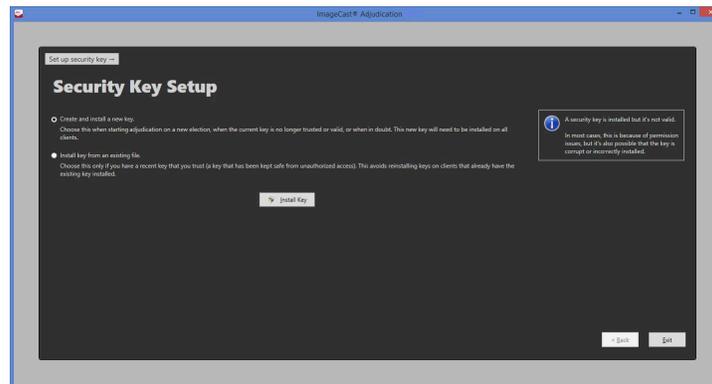


Figure 2-7: Update the security key

2.5 Ballot Filtering

The Ballot Filtering screen allows the user to select the outstack conditions to adjudicate. Outstack 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, see Figure 2-8.

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 2.5.1 Filtering Selections.

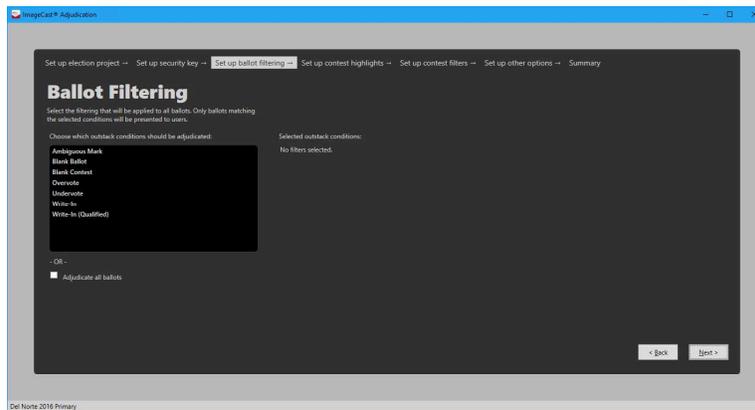


Figure 2-8: Adjudicate all ballots

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, see Figure 2-9.
2. Click **Next** to move to the next screen in the wizard.

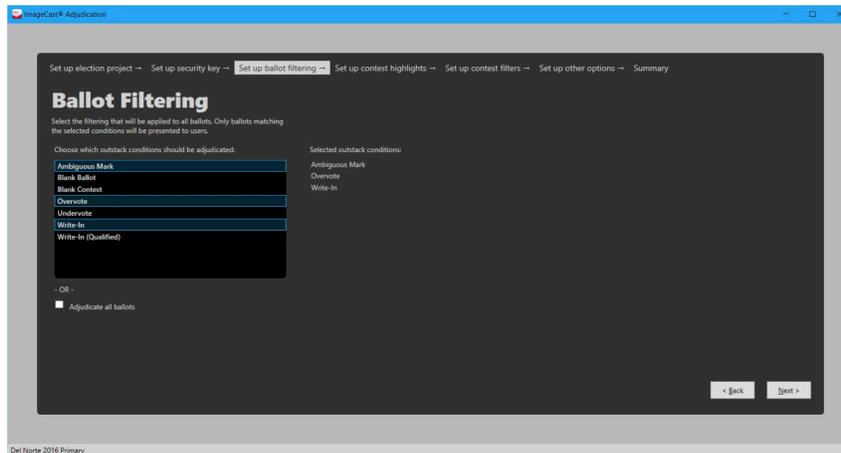


Figure 2-9: Select Outstack Conditions

2.5.1 Filtering Selections

ImageCast[®] Adjudication uses outstack conditions to virtually separate and categorize ballots based on predetermined 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 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.

2.6 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, see Figure 2-10:

1. Clear the Highlight any contest with an outstack condition checkbox.
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.

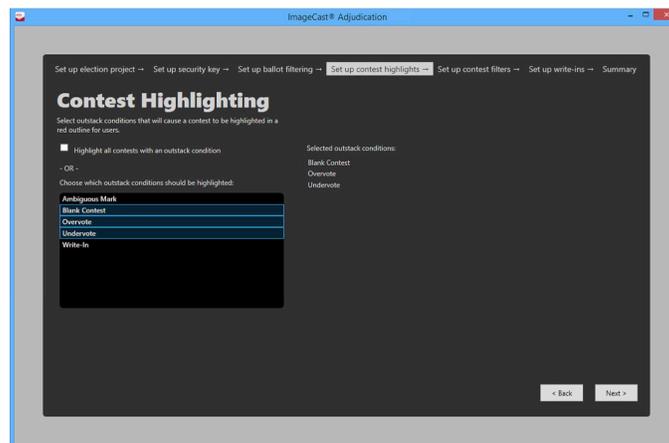


Figure 2-10: Contest Highlighting

2.7 Rejection Reasons

The Rejection Reasons screen, see Figure 2-11, allows administrators to customize the set of reasons that adjudicators can choose from when rejecting write-in candidates on a ballot. The screen is pre-populated with a few default reasons, which the administrator can choose to keep, remove, or modify as needed.

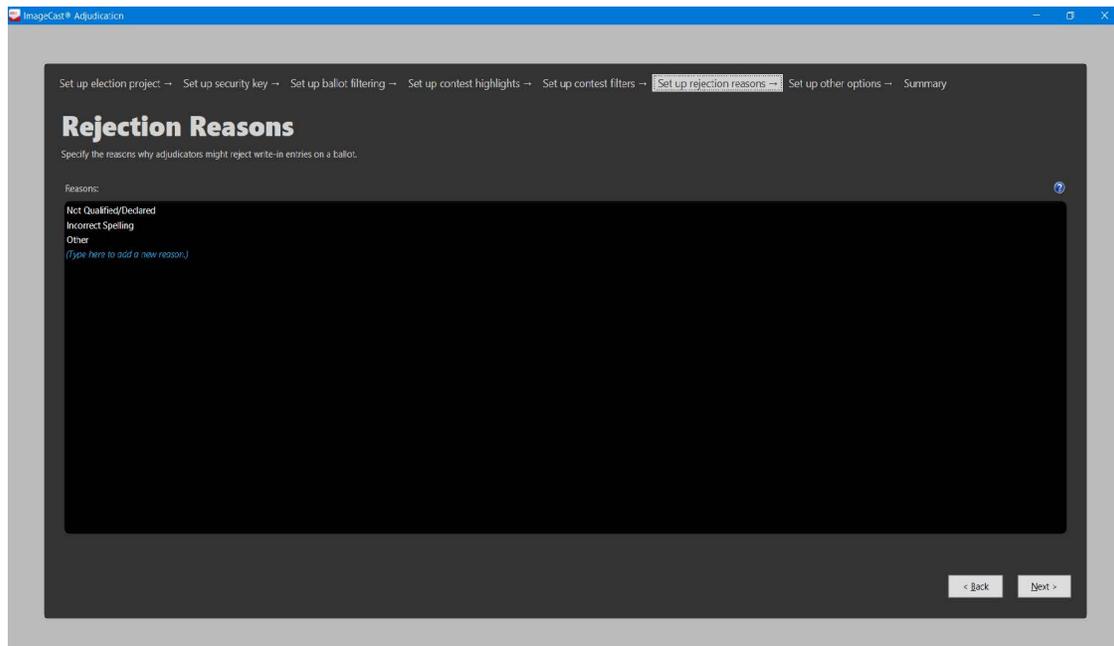


Figure 2-11: Rejection Reasons

The reasons entered here will be shown to all adjudicators, and cannot be changed once adjudication has started. However, adjudicators have the option to create additional rejection reasons while adjudicating:

- To add reasons: select the last row and start typing.
- To edit reasons: select the row for an existing reason and start typing.
- To start typing at the end of the line, press the End key first.

To remove reasons: select one or more rows and press the **Delete** key. Reasons are saved as you press **Enter** or select another row. To stop editing a row without saving changes, press the **Escape** key.

2.8 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 chooses to adjudicate all ballots in the Ballot Filtering step, all ballots

that contain the selected contest(s) will be available. If the user selects 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** checkbox.
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, see Figure 2-12

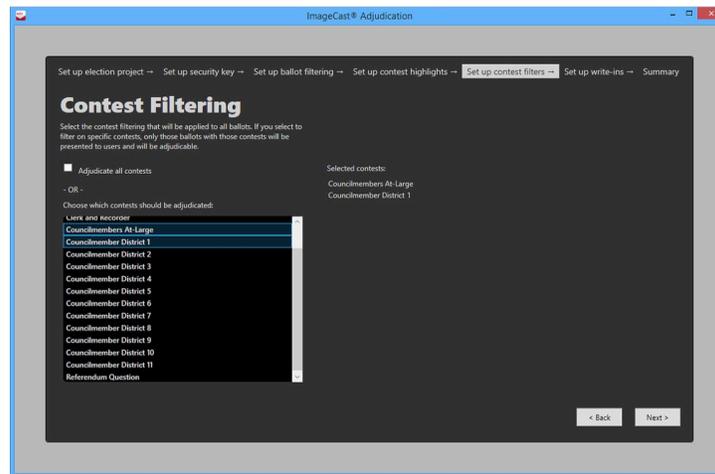


Figure 2-12: Contest Filtering

Re-selecting the Adjudicate all contests check box will again select all contests to be adjudicated.

2.9 Other Options

The Other Options screen (Figure 2-13) allows users to select miscellaneous adjudication options. Selecting these options usually depends on specific jurisdiction requirements

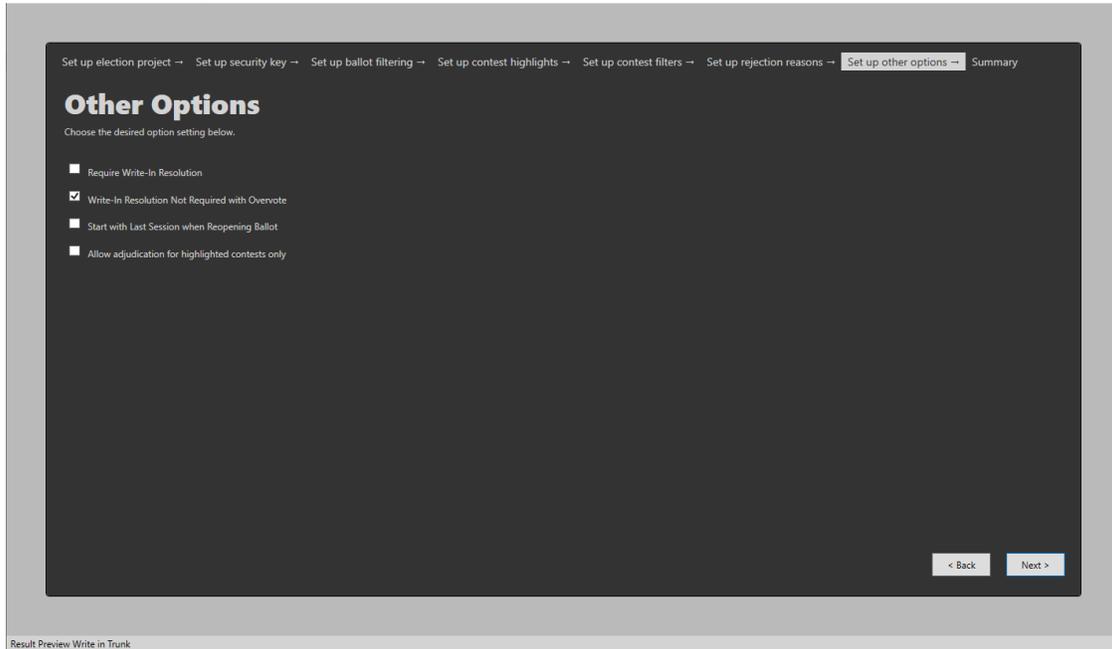


Figure 2-13: Other Options screen

The following describes the options on this screen:

1. **Require Write-in Resolution:** This option prompts adjudicators to resolve write-in contests to a qualified write-in, as opposed to allowing them to leave write-ins unresolved. This option is checked by default.
2. **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. If left checked, this option will not force adjudicators to resolve write-ins if the contest is overvoted. This option is checked by default.
3. **Start with Last Session when Reopening Ballot:** When selected, Adjudication displays the adjudications from the most recent previous session when reopening a ballot. When left unchecked, the user will see the original ballot, with no adjudications.
4. **Allow adjudication for highlighted contests only:** adjudication users are not allowed to adjudicate contests that are not highlighted and a notification displays at the top telling them this if they try. An adjudication administrator can open a quarantined ballot from Batch Management and is able to adjudicate any contest.

5. **Perform Database Maintenance Automatically (Hourly):** When selected, required database maintenance will automatically be performed in the background, eliminating the need to be performed manually.
6. To continue, select any desired options and click **Next**.

2.10 Summary Screen

The Summary screen allows you to review, see Figure 2-14:

- 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, the screen will display a **Resume Adjudication** button. Pressing this button allows the Administrator to resume with the adjudication of the election. Adjudication will resume once the Adjudication Services are ready to start processing.

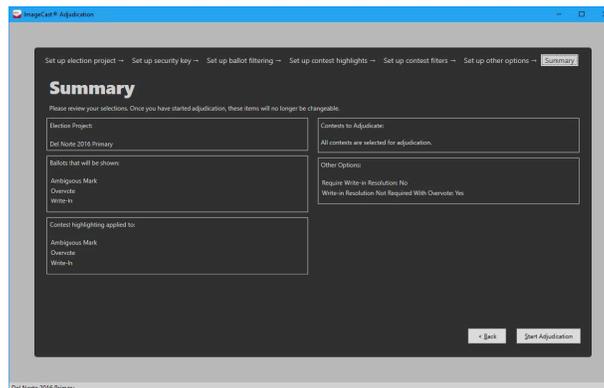


Figure 2-14: Summary

CHAPTER 3: 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 as well as to management operations, such as reporting, reopening 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.

3.1 Starting ImageCast® Adjudication

To start adjudication the administrator click **Start Adjudication** in the *Summary screen* of the *Project Setup Wizard*. For more information see section 2.10, Summary Screen.

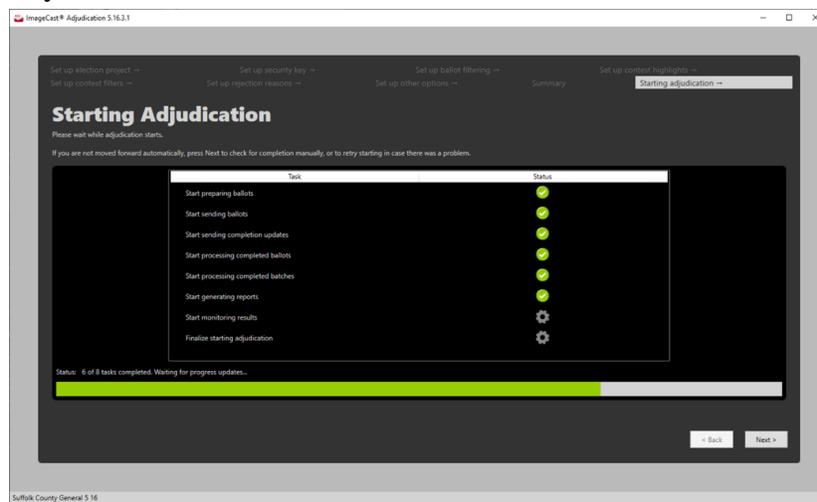


Figure 3-1: Starting Adjudication screen

Once adjudication is started, see Figure 3-1, **adjudication services** request results from the Democracy Suite Election Management System (EMS), which are typically loaded through Results Tally & Reporting (RTR). Adjudication services reads cast vote records from tabulator batches and transfers them into the adjudication system.

After starting adjudication the administrator cannot make changes to what has been 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

set up 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*.

3.2 Administrative Screens

The **Administrative Menu** is located on the left side of the main adjudication screen. It consists of a group of tabs that provide access to administrative functions, see Figure 3-2. From top to bottom, the tabs are:

- Batches
- Adjudicate
- Write-ins
- Reports
- Filtering
- Options Menu

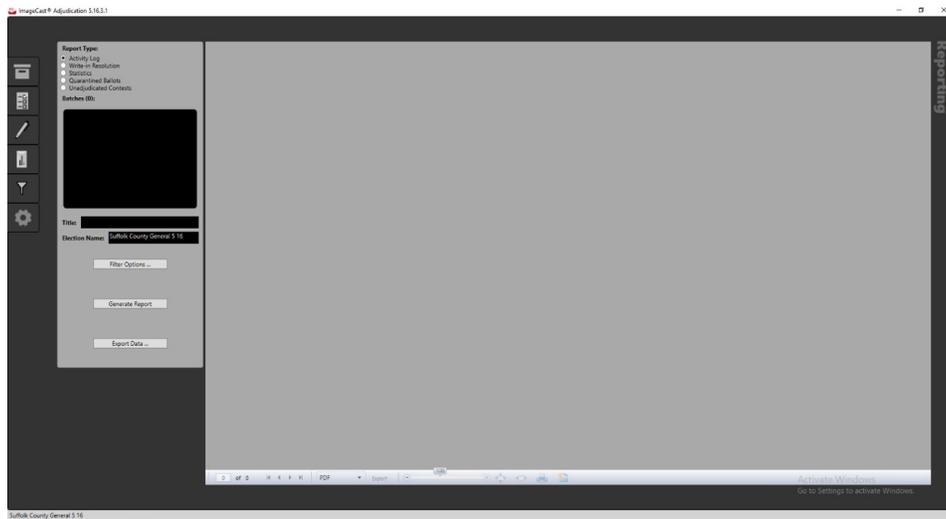


Figure 3-2: Administrative Menu

These tab screens will be discussed in further detail next.

3.2.1 Batches

The **Batches** tab provides access to the **Batch Management** screen, see Figure 3-3. This screen shows the list of ballot batches currently loaded into the system, provides overall progress information, and allows the review and submission of batches.

The top of the Review and Submitted Pane(s) will display the totals of all of the batches that remain in that status.

Batches are the entity under which results may be accumulated, reported on, and submitted to tally, and they are identified by a combination of the tabulator they came from, and a batch number assigned by the tabulator.

The screenshot shows the Batch Management interface with the following data:

In-Progress (7)					
Batch #	Added On	Status	Quarantined Ballots	Processed Ballots	Remaining Ballots
Tabulator 1 - Batch 1	9/10/2017 5:22 PM	✓	0	46	464
Tabulator 1 - Batch 2	9/10/2017 5:22 PM	✓	0	101	219
Tabulator 1 - Batch 3	9/10/2017 5:22 PM	✓	0	136	344
Tabulator 1 - Batch 4	9/10/2017 5:22 PM	✓	0	142	318
Tabulator 1 - Batch 5	9/10/2017 5:22 PM	✓	0	134	366
Tabulator 1 - Batch 6	9/10/2017 5:22 PM	✓	0	168	312
Tabulator 1 - Batch 7	9/10/2017 5:22 PM	✓	0	193	1

Review (3)				
Batch #	Modified On	Status	Adjusted Ballots	Total Ballots
Tabulator 1 - Batch 2	9/10/2017 5:02 PM	✓	229	229
Tabulator 1 - Batch 3	9/10/2017 5:02 AM	✓	344	344
Tabulator 1 - Batch 9	9/10/2017 5:04 PM	✓	346	346

Submitted (0)				
Batch #	Modified On	Status	Adjusted Ballots	Total Ballots

Figure 3-3: Batches Screen

Batches move through the panes in the Batch Management screen as they are processed. The following are the different states that a batch moves through in the Adjudication system:

- In-Progress
- Read Error
- Review
- Pending Submission
- Submitted
- Submission Error

In Progress

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**.

Each batch the in progress pane will list:

- Batch Tabulator and Number
- Date the batch was added to adjudication
- The Status
- Total number of Quarantined ballots
- Total number of Processed ballots (that have been adjudicated)
- Total number of Remaining ballots (requiring adjudication)
- Total Ballots in batch

In Review

Each ballot in the Review pane will list:

- Batch Tabulator and Number
- Date Modified (date / time last ballot in batch was modified)
- Status
- Total number of Adjudicated Ballots
- Total number of ballots in the batch

When a batch is completed, that is, all its ballots have been adjudicated, its status changes to **Review**. Additionally, if ballot filters were set up in a way that causes no ballots in a batch to require adjudication, the batch will automatically move over to **Review**. A batch in review is available to be reopened and adjudicated, and for reporting and submission for tallying.

After a batch is submitted (see section 3.2.1.5), 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**.

Batches that are in progress or in read 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.

3.2.1.1 Viewing Batch Ballots

Batches in the **In-Progress** and **Review** panes can be expanded to show ballots in statuses of interest to an administrator.

The **In-Progress** pane shows ballots that are currently being adjudicated (in progress), ballots already adjudicated, and ballots marked as quarantined, while the **Review** pane shows only ballots that are adjudicated (since batches in this pane are completed).

Hovering over a ballot displays a tool-tip with details about the ballot, such as the most recent modification. Except for in-progress ballots, double-clicking on a ballot opens it for review. See later sections for more on reviewing (reopening) ballots.

Ballots can be filtered on by using the status filter at the bottom of the **In-Progress** pane. Clicking on each box allows the user to hide or show the ballots with the corresponding status, see Figure 3-4. This is helpful when an administrator needs to look for ballots in specific statuses, e.g., when reviewing quarantined ballots.

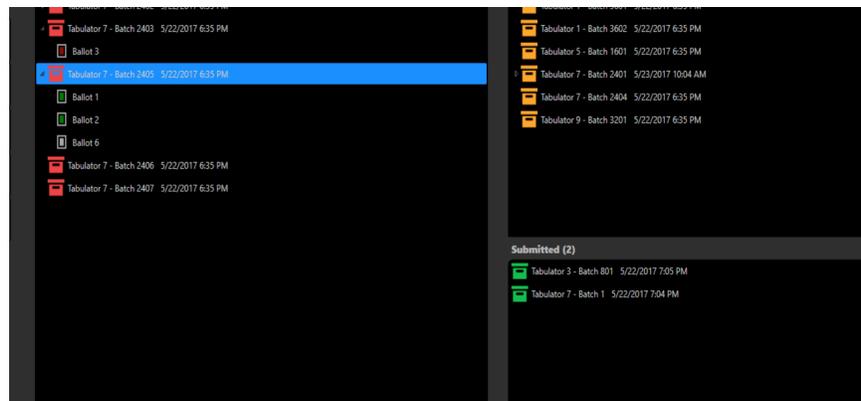


Figure 3-4: Expanded Batches with Ballots

The In-Progress and Review panes also include information about adjudicated ballots with unresolved write-ins. A ballot with unresolved write-ins is flagged with a 'w' in a red circle in the upper right corner of its green box icon, see Figure 3-5. Similarly, a batch that contains such ballots is also flagged with a 'w' in the upper right corner of its icon. If you hover over the icon for a batch that is flagged for unresolved write-ins, a tool-tip is displayed, giving the number of ballots in the batch with unresolved write-ins.

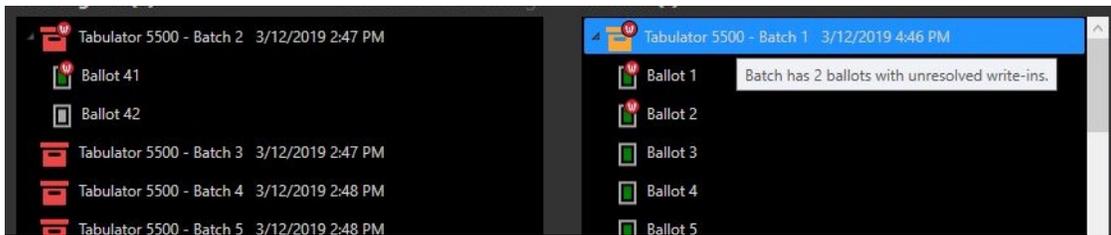


Figure 3-5: Ballots and Batches with Unresolved Write-Ins

3.2.1.2 Re-opening Ballots

Re-opening a ballot consists of double-clicking an adjudicated or quarantined ballot in the **Batch Management** screen. When this is done, the ballot is displayed in the Adjudication screen, which allows working with the ballot in the same way as is done during normal adjudication.

Note that if another ballot was already displayed in the **Adjudication** screen, the administrator will be given the option to save or discard changes on that ballot, or to cancel reopening and keep the previous ballot.

After reopening a ballot, the administrator can re-adjudicate it if desired, or change its quarantine status (see subsequent sections for more on this). Additionally, the administrator may simply decide to view the ballot without changing anything. For example, the administrator can go back to the **Batch Management** screen and reopen a different ballot without having to do anything on the previously reopened ballot.

To reopen a ballot for review or for readjudication:

1. In the **In-Progress** pane or **Review** pane, click 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 to **Overwrite** to save changes, or **Revert** to discard any changes made.

5. On the confirmation message that appears, click **OK** to confirm your choice, see Figure 3-6.

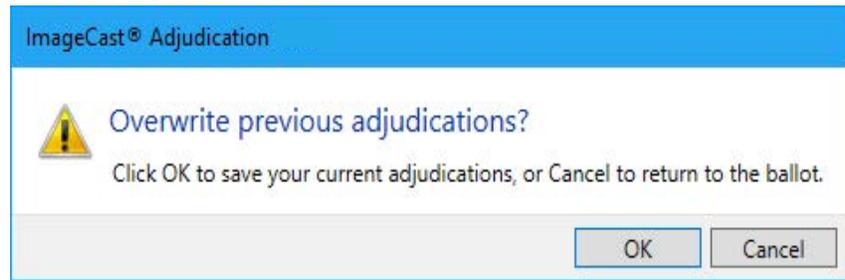


Figure 3-6: Confirmation message when readjudicating a ballot

3.2.1.3 Handling Quarantined Ballots

Quarantined ballots are ballots that an adjudicator explicitly marked for review during the adjudication process (see section 4.2.12).

After reopening a quarantined ballot, an administrator should review the ballot and the quarantine notes added by the adjudicator, see Figure 3-7. Then, the administrator should either adjudicate the ballot, or unquarantine it, so that an adjudicator can subsequently adjudicate it.

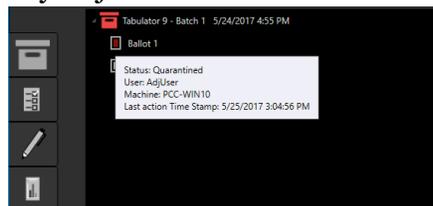


Figure 3-7: Quarantined Ballot in Batch Management

To review a quarantined ballot:

1. In the **In-Progress** pane, click the arrow to the left of a batch.
2. Double-click a quarantined ballot to re-open it.

3. Review the ballot once it opens in the adjudication screen. To see the notes added by the adjudicator, click **Quarantine Notes**. A dialog will be displayed, see Figure 3-8.

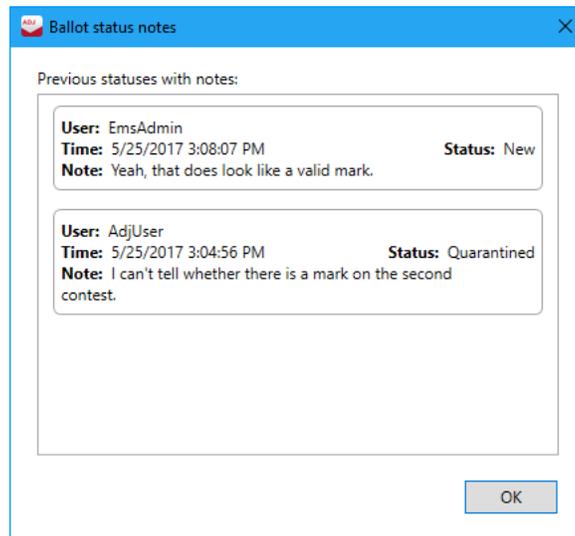


Figure 3-8: Ballot Quarantine Notes

To unquarantine a ballot:

1. In the **Ballot Navigation** menu of the adjudication screen, click **Unquarantine**.
2. On the confirmation dialog, enter a note explaining why the ballot is being removed from quarantine. This should provide guidance to adjudicators on how to adjudicate the ballot correctly.

3. Press **OK**, see Figure 3-9.
The ballot will be taken away and sent to an adjudicator later on.

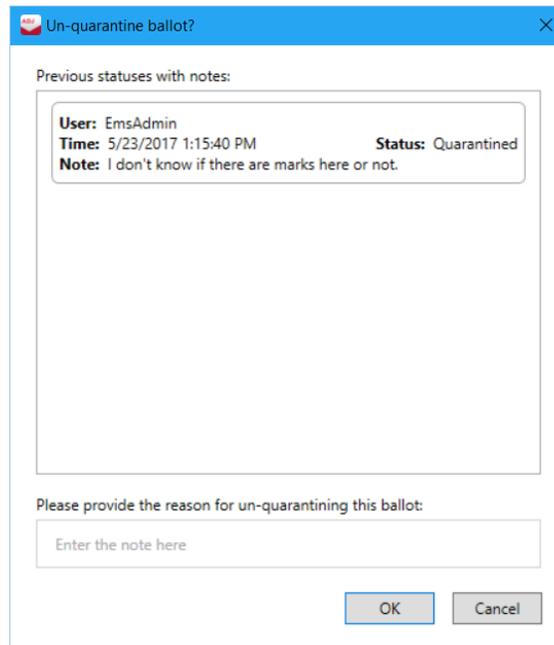


Figure 3-9: Unquarantine Ballot Dialog

3.2.1.4 Adjudication Progress

Administrators can check on progress for specific batches by clicking on the batches in the **In-Progress** pane, see Figure 3-10. Doing this shows a notification bar at the top of the screen. This notification appears for a short amount of time and indicates how many ballots have been processed, and how many are in progress or quarantined for the selected 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 used to ensure that the batch status and Ballots Remaining counter is current. It checks if you've received any notification of updates, and if so, retrieves those updates (from the server).

In addition to that, the **Force Refresh** button, underneath the Refresh button, retrieves any updates from the database and sends them to all the clients. The **Force Refresh** button is not intended for regular use. It should only be used if you don't see batches that you know have been loaded, and when enough time has passed for them to load. Please avoid pressing this button repeatedly as it can stress the system, making the problem worse.

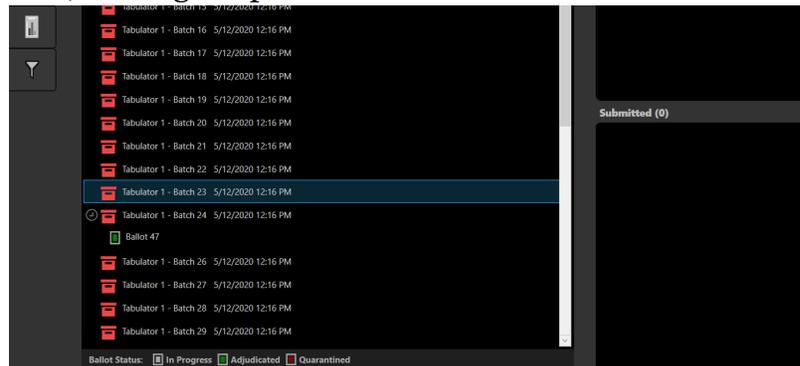


Figure 3-10: Batch Progress

3.2.1.5 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, see Figure 3-11.

3. Right-click the batch and select Reset in-progress ballots.

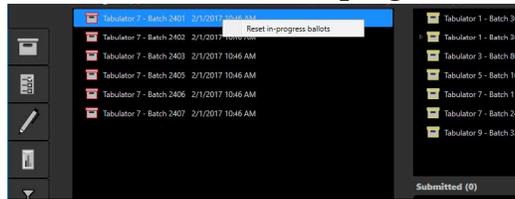


Figure 3-11: Resetting In-Progress Ballots

3.2.1.6 Spoiling a Batch

Spoiling a batch is a last-resort remedy for removing an in-progress batch from Adjudication when there is something wrong with the batch. For example, a batch may need to be spoiled when there are bad ballot images that prevent ballot adjudication.

A spoiled batch will no longer be shown in the Batches screen nor will it be available to run reports on. No ballots from that batch will be served to users, and any adjudications made on ballots within the spoiled batch will be ignored. To re-introduce those ballots to Adjudication they must be validated in RTR.

To spoil a batch it is necessary to Reject its respective result file in RTR. See the section “Result State Management” in the *Democracy Suite® EMS Results Tally & Reporting User Guide* for more information. A few moments after this is done, the Adjudication system will receive an update from the EMS, any rejected batches will be marked spoiled in Adjudication, and any ballots belonging to that batch will be recalled from clients.

3.2.1.7 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.

NOTE: 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 click **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 batch.
2. Drag the selected batch to the Submitted pane.

3.2.2 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 Chapter 4 Adjudication Process.

3.2.3 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, see Figure 3-12, but qualified write-ins are no longer managed in Adjudication; this is now done in Election Event Designer instead.

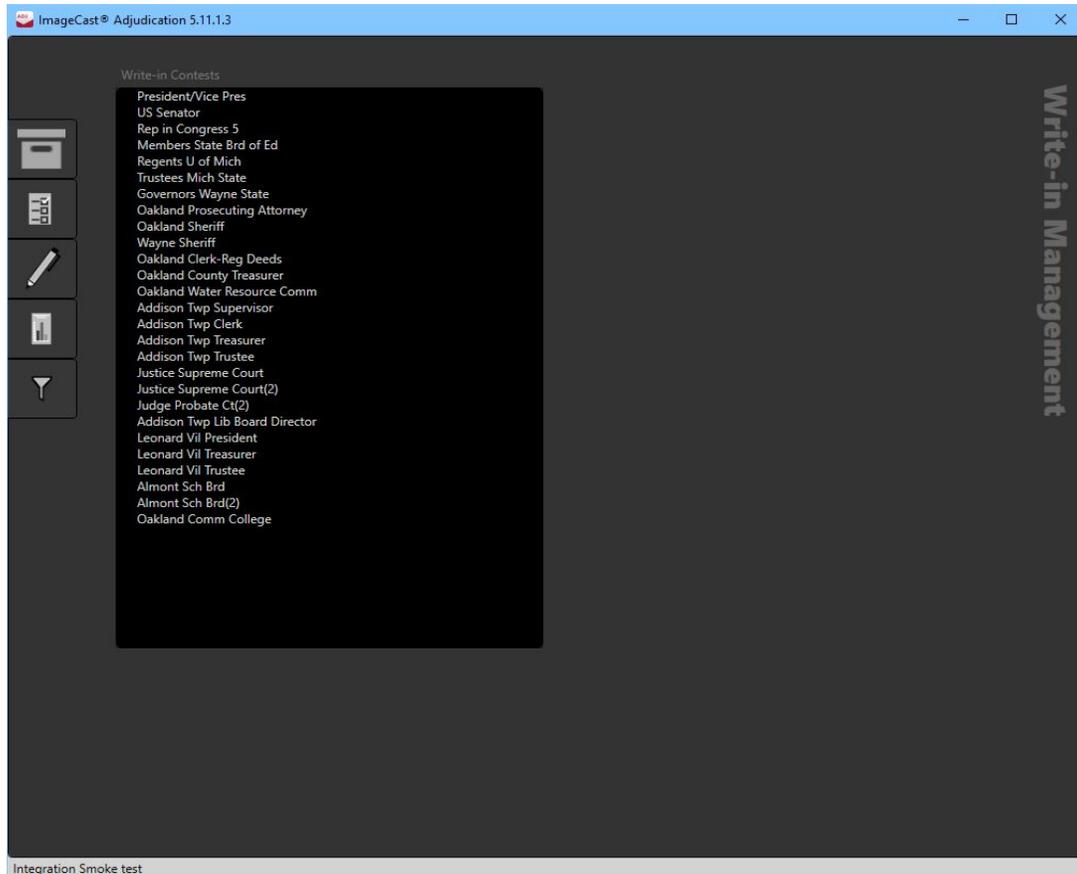


Figure 3-12: Write-in Screen

3.2.4 Reports

The following report types are available to Adjudication Administrators:

- Activity Log
- Write-in Resolution
- Statistics

- Quarantined Ballots

The Summary report is available only for batches submitted to RTR. All other report types are available for completed or submitted batches. In addition, the Quarantined Ballots report is available for in-progress batches as well. The list of batches on this screen will adjust to show the ones that apply for the report type currently selected by the user, see Figure 3-13.

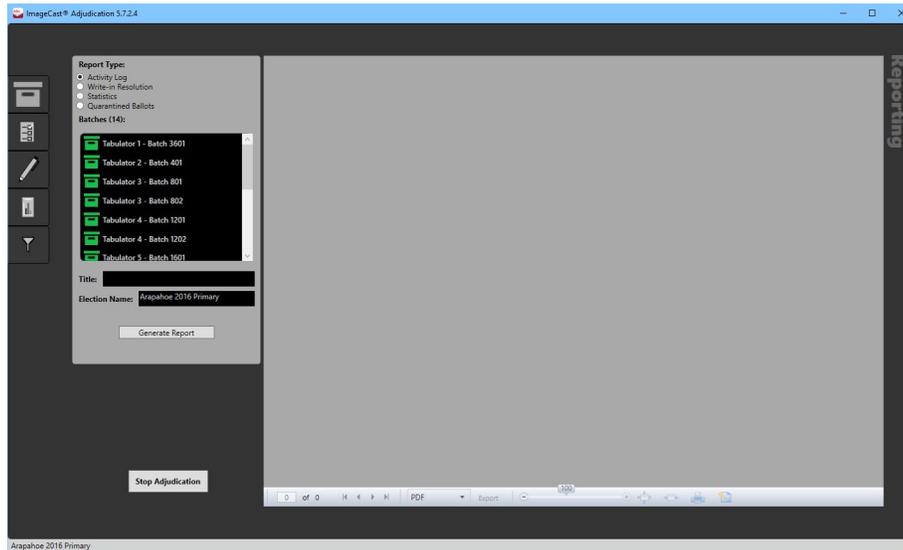


Figure 3-13: Reports Screen

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 (that is, the batch will temporarily disappear from the list).

The election project name is automatically populated the **Election Name** field. The user can change this or the title of the report at will. Once a report is generated, if updates are received afterwards for one or more of the batches included in the report, the user is notified that the data in the report may be out of date.

The report viewing area displays reports in a paged, ready-to-print layout and allows the user to zoom in or out. It also allows exporting reports as PDFs, Excel, or generic CSV files, to facilitate importing results into other systems. The **Stop Adjudication** button is located on this screen. Stopping adjudication is the final step in the adjudication process for an election. See 3.3.1 Stopping Adjudication for details.

3.2.4.1 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 (see section 2.4 Security Key Setup). 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** pane in Adobe.
2. Expand Signature Details and select Certificate Details. The Certificate Viewer window will appear, see Figure 3-14.
3. Click the **Trust** tab and highlight the root certificate in the left pane.

4. Click **Add** to Trusted Certificates. When the report is closed and reopened, Adobe verifies that the certificate is now trusted.

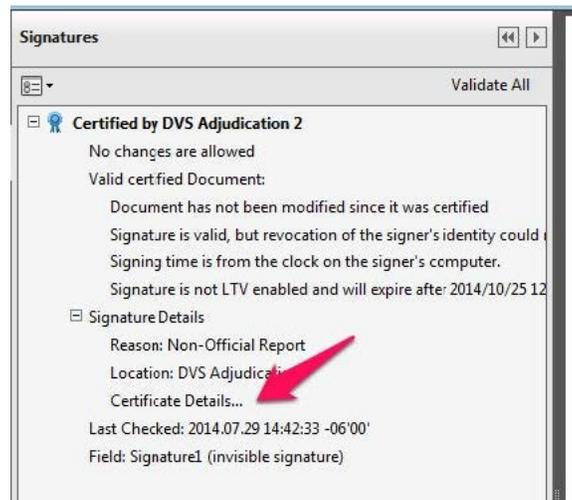


Figure 3-14: Signature view

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.

3.2.4.2 Activity Log Report

Activity Log 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)

By Selecting Filter Options you can choose specific criteria for the report, see .

The Filters are, see Figure 3-15:

- Outstack condition
- Adjudication User
- Tabulator
- Adjudication activities that occurred on a specific date or date range

Figure 3-15: Activity Report Filter Options

Additionally, ballots that did not meet any outstack conditions, and were thus filtered out of adjudication, will be reported on in a "summary" section for each batch.

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.

- Select **Generate Report**, see Figure 3-16.

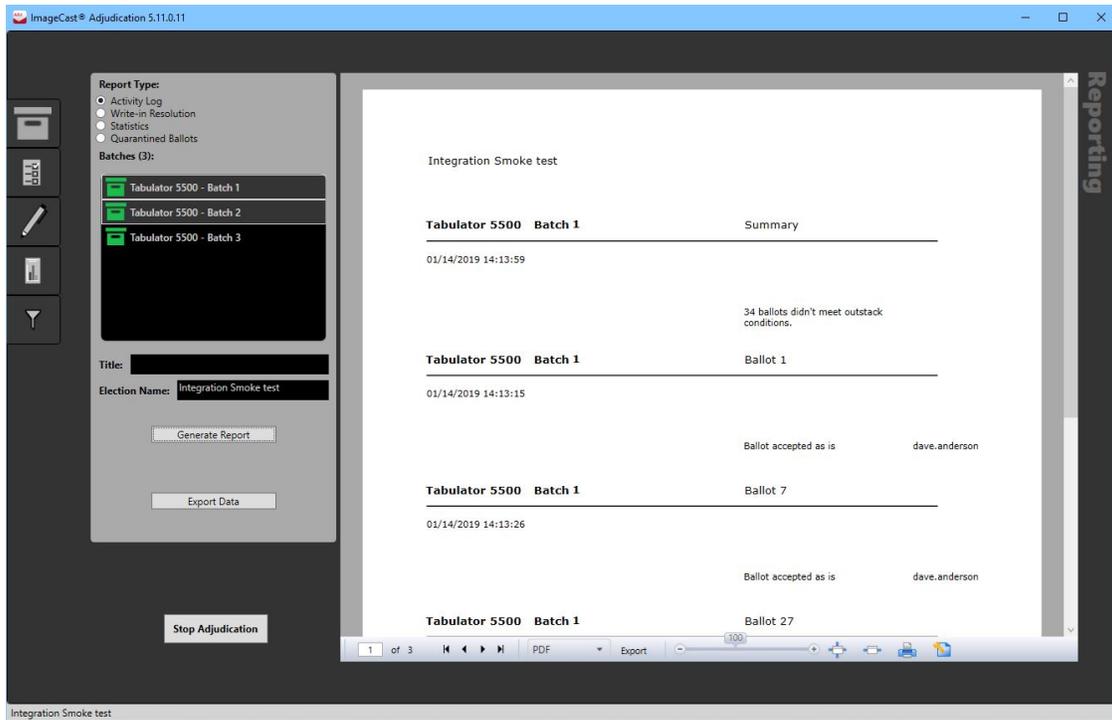


Figure 3-16: Activity report

3.2.4.3 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, see Figure 3-17:

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**.

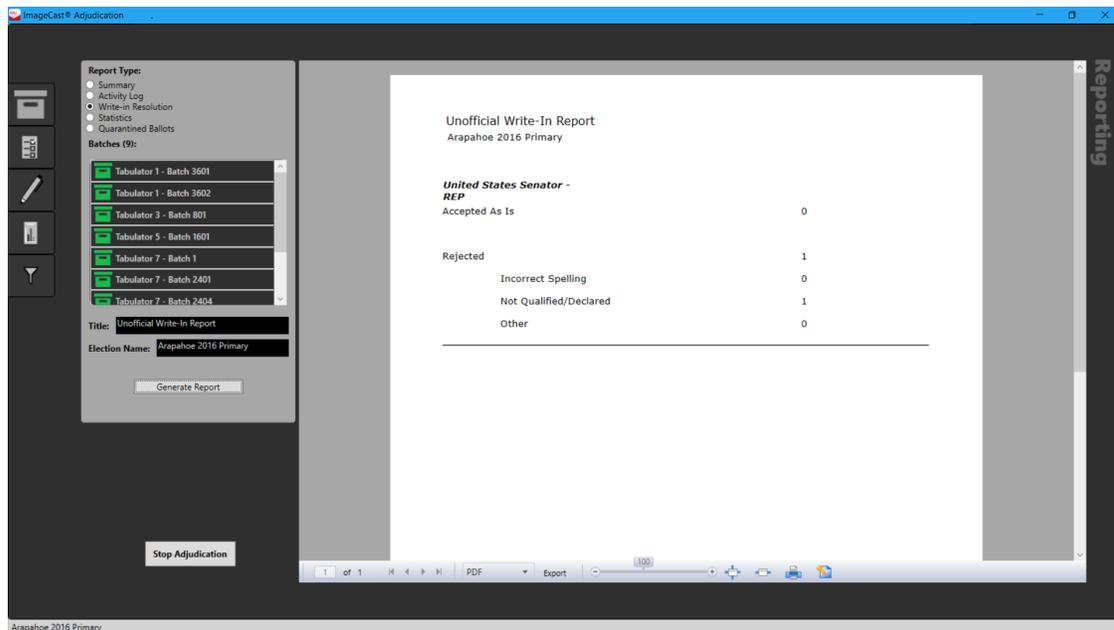


Figure 3-17: Write-in Resolution Report

Locating unresolved write-ins

To locate unresolved write-ins:

1. Run the Adj Activity log.
2. Save the Activity log as a PDF.
3. Search the PDF for 'Write-in Accepted As-Is'.

Once the unresolved write-ins are located, follow the standard procedure for re-adjudicating that ballot (batch).

3.2.4.4 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.

1. Select the Statistics report type, see Figure 3-18.

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**.

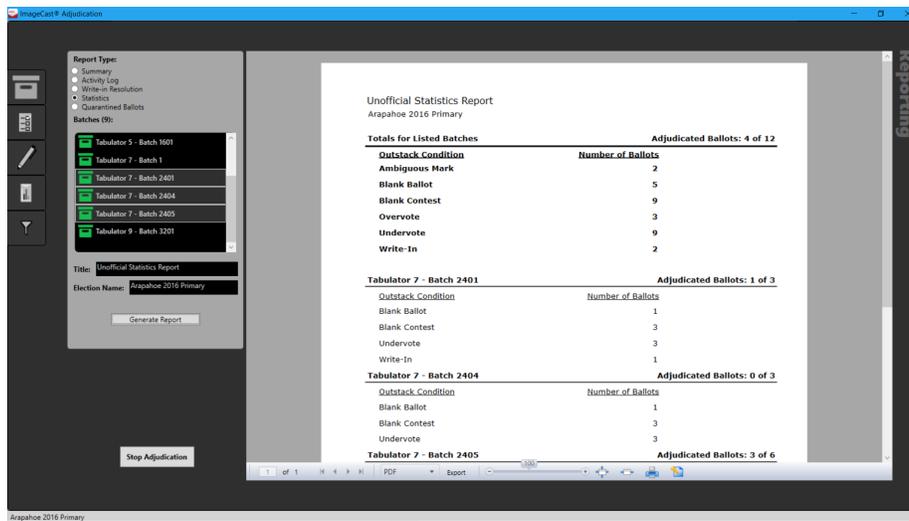


Figure 3-18: Statistics Report

3.2.4.5 Quarantined Ballots Report

The Quarantined Ballots report shows the record of quarantine activity for ballots in the selected batches. Only ballots that were quarantined at least once will be shown in the report. Entries are grouped by tabulator, batch, and ballot in ascending order, and each entry shows information such as the time, user, and description of the action.

To generate the report, see Figure 3-19:

1. Select the **Quarantined Ballots** report type.
2. Select one or more batches to view quarantine information on.
3. In the **Title** field, type a title or leave as-is.
4. In the **Election Name** field, type or modify the election name.

5. Click **Generate Report**.

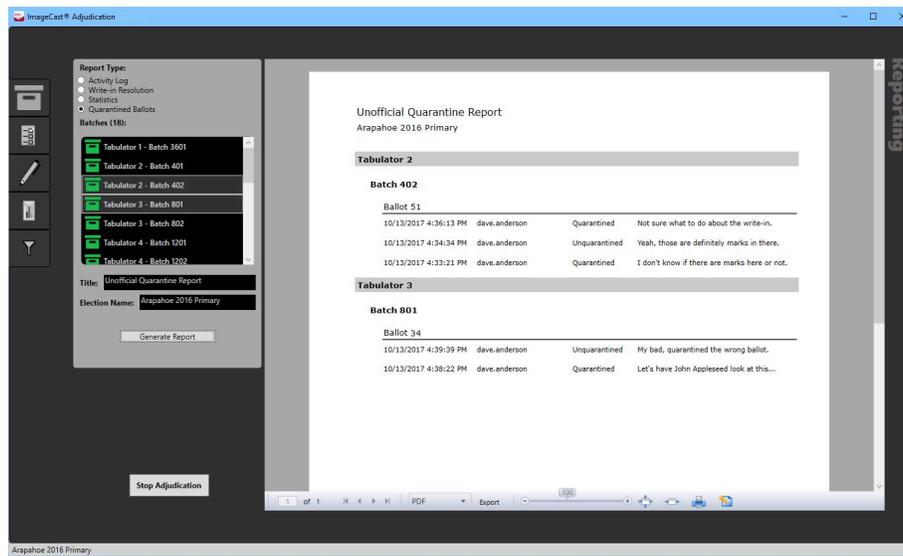


Figure 3-19: Quarantined Ballots Report

3.2.4.6 Activity Log Export

Activity log data can also be exported to a CSV file in a flat format that facilitates manipulation in Excel. To do this, follow the steps below:

1. Select **Activity Log** in the **Report Type** radio button group, and select that batches for which you want to export data.
2. Click the **Export Data** button, instead of the **Generate Report** button. This brings up a **File Save** dialog.
3. Navigate to the desired output directory, and enter a file name.
4. Click **Save** to save the export file.

The CSV file generated by the export has the following columns:

- **RowType:** The rows in the CSV file give data at the level of individual adjudications, adjudication sessions as a whole, and batches as a whole. The row types are:
 - **Mark Adjudicated:** An adjudication made to the voting target for choice.
 - **Session Summary:** Summary of an adjudication session.
 - **Batch Summary:** Summary of a batch.
 - **Ballot Quarantined:** A ballot was quarantined, this happens outside of any adjudication session.

- **Ballot Unquarantined:** A ballot was released from quarantine, this happens outside of any adjudication session.
- **AdjudicationType:** For Mark Adjudicated Rows, this is the type of adjudication that was performed. For other row types, the value is "None". Adjudication types are None, Mark Removed, Mark Added, Write In Accepted As Is, Write In Resolved, and Write In Rejected.
- **AdjudicationCount:** This is **1** for a Mark Adjudicated row. For a Session Summary Row, it's the number of adjudications in the session. For a Batch Summary row, it's the number of adjudications in the batch. For other row types, it's zero.
- **SkippedBallotCount:** For a Batch Summary row, this column corresponds to the number of ballots in the batch that were not served to users because they didn't meet the given outstack conditions. For other row types, it's zero.
- **TabulatorId:** The tabulator ID of the batch.
- **BatchId:** The ID of the batch.
- **BallotNumber:** A sequential ID of the ballot, zero for a batch summary row.
- **SessionNumber:** For Mark Adjudicated and Session Summary rows, this is a sequential session number. For other row types, it's zero.
- **SessionEndTime:** For Mark Adjudicated and Session Summary rows, this is the date and time when the user finished adjudicating the ballot. For other row types, this is blank.
- **TimeToAdjudicate:** For Session Summary rows, this gives the time span from when the ballot was first presented to the adjudication user and when adjudication was completed.
- **ContestName:** For Mark Adjudicated rows, this gives the name of the contest containing the adjudicated choice. For other row types, this is blank.
- **ChoiceName:** For Mark Adjudicated rows, this gives the name of the adjudicated choice. For other row types, this is blank.
- **ItemDescription:** An activity description.
- **UserName:** The Windows user name of the user performing the action.
- **OutstackConditions:** For Mark Adjudicated rows, this gives the original outstack conditions for the contest containing the adjudicated choice. For SessionSummary rows, this gives the original outstack conditions for the ballot as a whole.

3.2.5 Filtering

The Filtering screen, see Figure 3-20, 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 2.5 Ballot Filtering through 2.7 Rejection Reasons for more information.

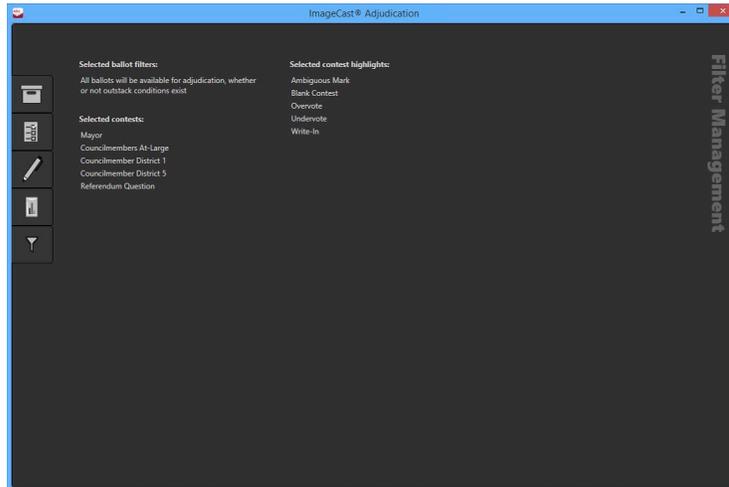


Figure 3-20: Filtering Screen

3.3 Other Options

The Other Options menu has additional settings, see Figure 3-21.

- Changing ballot adjudication options:
 - Start with last session when reopening ballot
 - Allow adjudication for highlighted contests only

- Stopping Adjudication

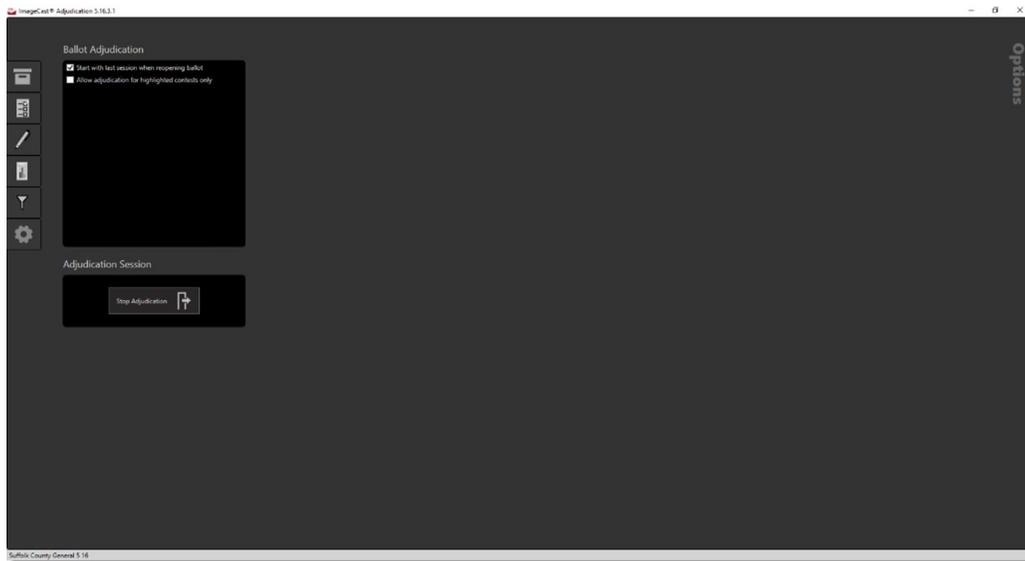


Figure 3-21: Other Options Screen

3.3.1 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 2.2 *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 *Other Options* screen.
2. Select **Stop Adjudication**.

You will be redirected to the *Stop Adjudication* screen.

3. Click **Stop**. The *Confirm Stop Adjudication* window appears, see Figure 3-22.

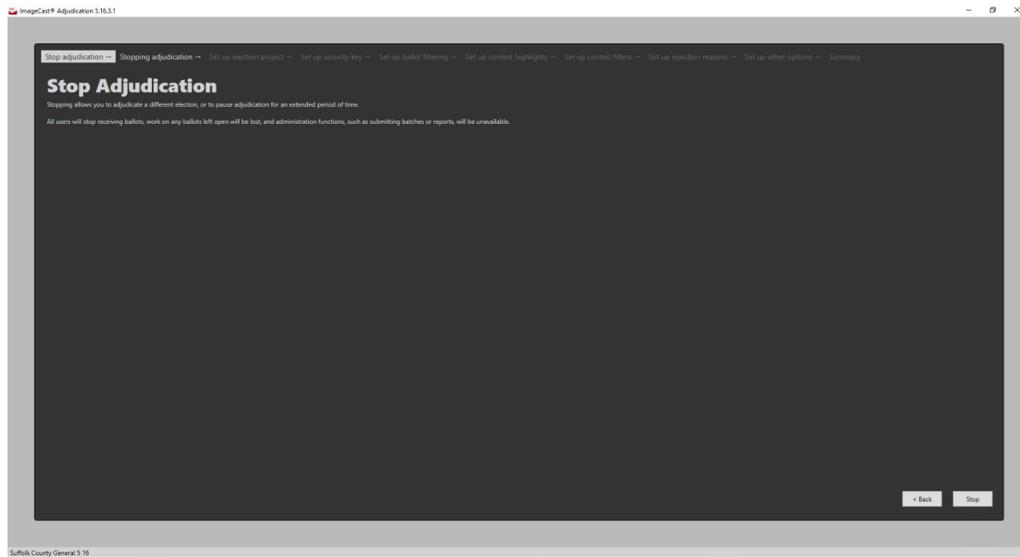


Figure 3-22: Stop Adjudication

4. Confirm that you would like to end adjudication by clicking **Yes**, see Figure 3-23.

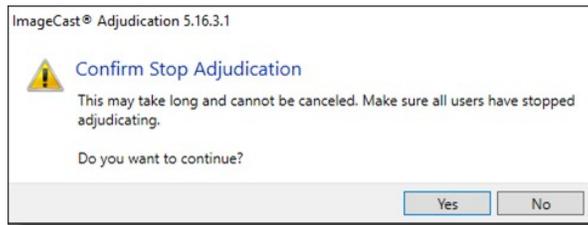


Figure 3-23: Confirm Stop Adjudication

5. The *Stop Adjudication* screen will display the progress of services as they are stopped, see Figure 3-24.

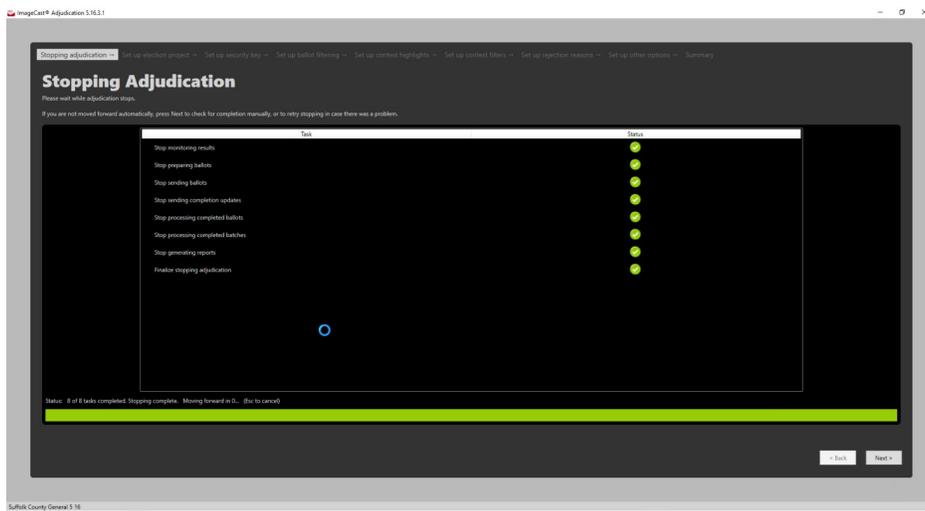


Figure 3-24: Stop Adjudication Progress Display

3.4 Manually Maintain Database

To manually complete database maintenance:

1. Click **Settings > Options**.
2. Under *Database Maintenance and Backups*, click **Maintain Database Now**.
The System re-indexes fragmented indexes, and updates database statistics.

3.5 Backing up and Restoring Adjudication

The adjudication application uses three SQL Server databases:

- Election store
- Tabulation store

- 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. They will be named as follows:

- Tabulation store: TabulationStore Election name Date/time stamp
- Adjudicable Ballot store: 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.

3.5.1 Backing up the Adjudication Databases

To manually backup the Adjudication database:

1. Select **Settings > Options**.
2. Under *Database Maintenance and Backups*, click **Backup Database**.
The database is stored in NAS\{Project directory}\Adjudication backups.

3.5.2 Restoring Previously Archived Databases

NOTE: The following procedure is performed from the EMS server.

1. From the Start menu, right-click **Computer** and select **Manage**. The Computer Management window appears.
2. Expand Services and Applications and click **Services**.
In the Services pane, scroll down to the services whose names start with **DVS**.

The application has the following services:

- DVS Adjudicable Ballot Service
- DVS Adjudication Data Service
- DVS Ballot Completion Service
- DVS Ballot Preparation Service
- DVS Batch Completion Service
- DVS Election Data Service
- DVS Election File Manager
- DVS Report Builder Service
- DVS Report Service
- DVS Statistics Service.

3. Right-click each Service and click **Stop**.
4. Open SQL Server Management Studio.
5. In the Connect to Server window, click **Connect**.
6. In the Object Explorer pane, click the Databases folder.
7. Right-click ElectionStore and click **Delete**.
8. In the Delete Object window, click **Close existing connections** and click **OK**. You are returned to the Object Explorer pane.
9. Repeat this process for the TabulationStore and AdjudicableBallotStore databases.
10. After the process have been completed for all three databases, in Object Explorer pane, right-click the Databases folder and click **Restore Database**.
11. In the Restore Database window, click **From device** and browse to the backup location where ElectionStore.bak is found. Click **OK**.
12. In the Restore Database window, check **Restore** and in the **To database** field type-in the name of the database being restored.

NOTE: Right-click and copy the database name from the Device field to ensure the database name is correct. Click **OK**.

13. Repeat this process for TabulationStore.bak.
14. 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**.
15. In the Restore Database window, check **Restore** and in the **To database** field, type in the name of the database being restored.
16. Click **Options** in the **Select a page** pane.
17. Check the entire **Restore As** field names and remove any colons, if existing, in AdjudicableBallotStore.mdf and AdjudicableBallotStore.LDF. Click **OK**.

3.5.2.1 Starting Adjudication Services

NOTE: The following procedure is performed from the EMS server.

1. Right-click the Start menu, and then select **Computer Management**. 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**.

CHAPTER 4: ADJUDICATION PROCESS

ImageCast[®] Adjudication eliminates the need to physically rescan ballots, which can potentially damage the originals and cause of 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.

4.1 ImageCast[®] 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 an out of the ballot image. Additionally, some actions are available via keyboard shortcuts.

Table 4-1 is a listing of available 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)

Table 4-1: Shortcut keys

4.2 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 is located on the right side of the screen, see Figure 4-1. From top to bottom, it provides:

- Toggle switch to hide or show target overlays and highlights
- Description of the ballot being adjudicated
- Thumbnails to switch between ballot faces
- Buttons to complete adjudication and perform other tasks

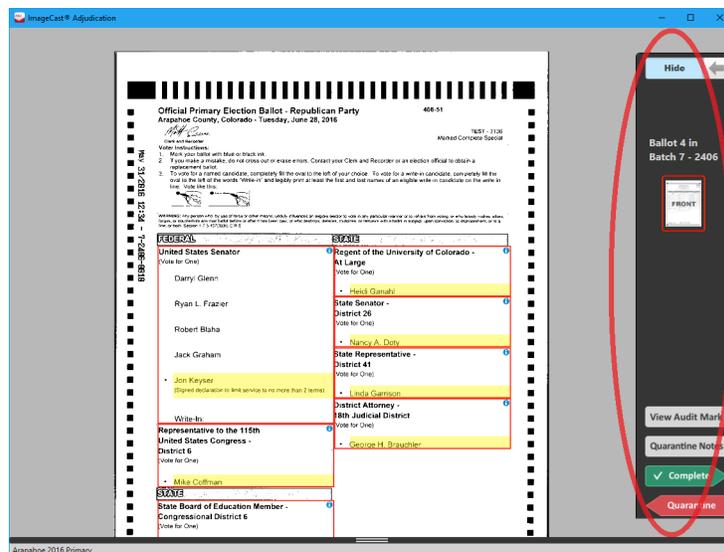


Figure 4-1: Ballot Navigation

4.2.1 Turning the Ballot Overlay On/Off

The toggle switch at the top of 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 it 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, see Figure 4-2:

1. On the Ballot Navigation menu, click **Hide** to remove checkmarks and overlays.

2. To view the checkmarks and overlays again, click **Show**.

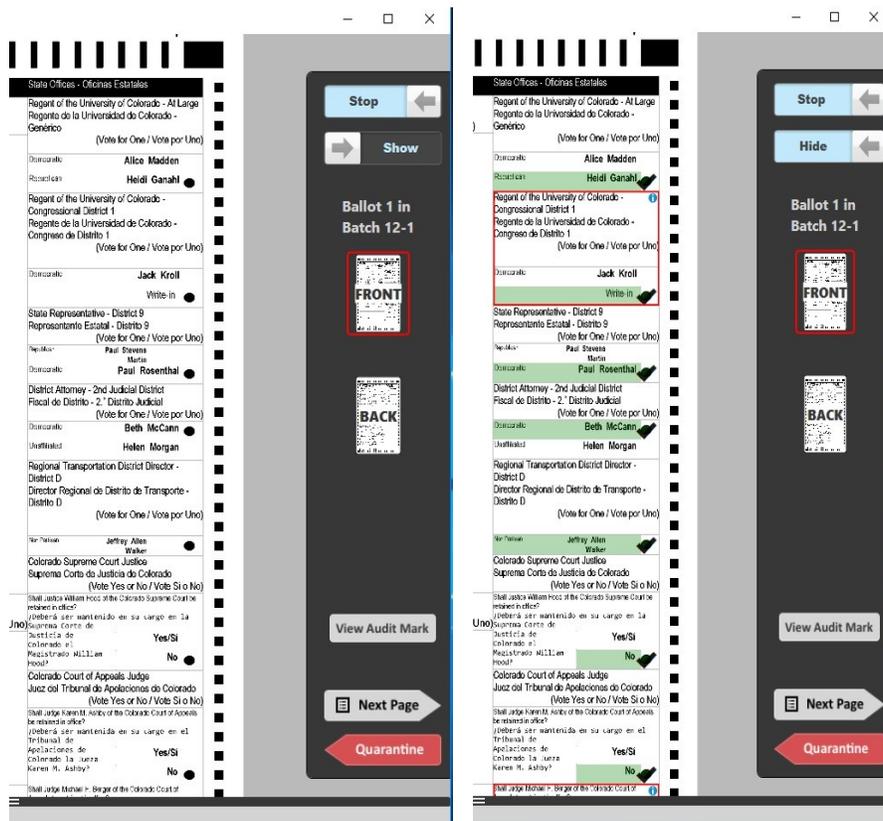


Figure 4-2: Show (left)/Hide (right) Overlay

4.2.2 Ballot Information

Ballot information is shown below the overlay toggle switch, see Figure 4-3. This identifies the ballot with a unique number within its batch, and identifies the tabulator and batch 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. A tooltip will appear shortly and display this additional information.

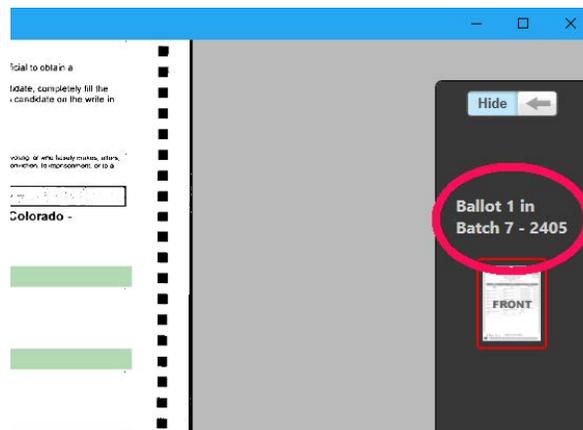


Figure 4-3: Ballot Information

4.2.3 Ballot Face Navigation

Below the ballot information there are thumbnails labeled **Front** and **Back**, and they represent the sides, or faces, of the ballot. Clicking these thumbnails allows the user to switch ballot faces as needed.

NOTE: There might be ballots for which one of the sides is not present. Typically, this occurs for ballots with no content on the back. When this is the case, only the thumbnail for the side that's present will be visible.

NOTE: The application automatically takes a user to the first available contest that requires ballot adjudication. This means that sometimes the back of a ballot will be shown first. A red outline always surrounds the appropriate thumbnail to identify which side of the ballot is being shown.

4.2.4 Viewing the Audit Mark

The **View Audit Mark** button allows the adjudicator to review the ImageCast® AuditMark. The AuditMark is part of the ballot image and provides details on the tabulator's interpretation of the ballot, which can further aid in adjudicating the voter's intent, see Figure 4-4.

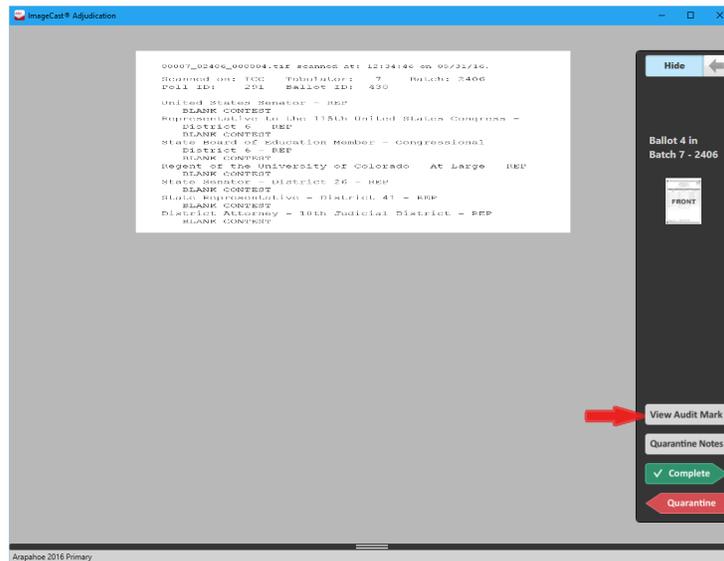


Figure 4-4: View Audit Mark

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.

4.2.5 Viewing the Audit Mark with Split View

The ballot viewing area can also be split into two panes 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, see Figure 4-5.

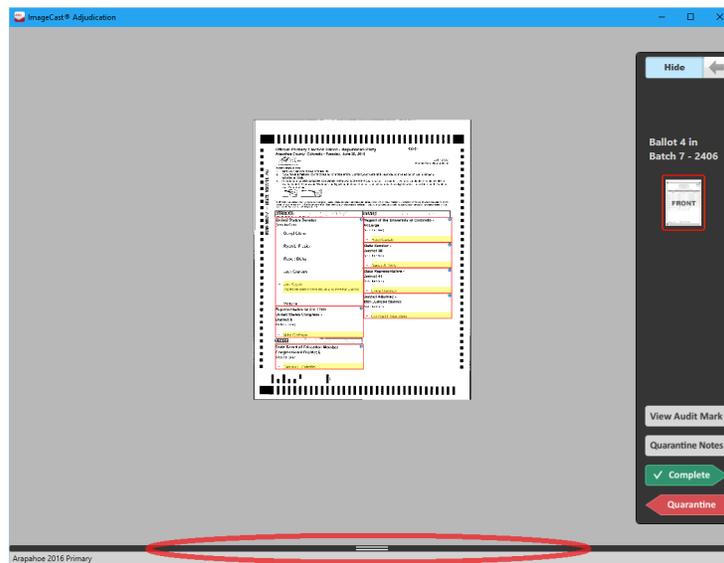


Figure 4-5: “Split View Splitter”

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.

4.2.6 Viewing a Blank Ballot

To easily identify when a delivered ballot has been identified as a blank ballot, Adjudication highlights the entire ballot as a red overlay, see Figure 4-6.

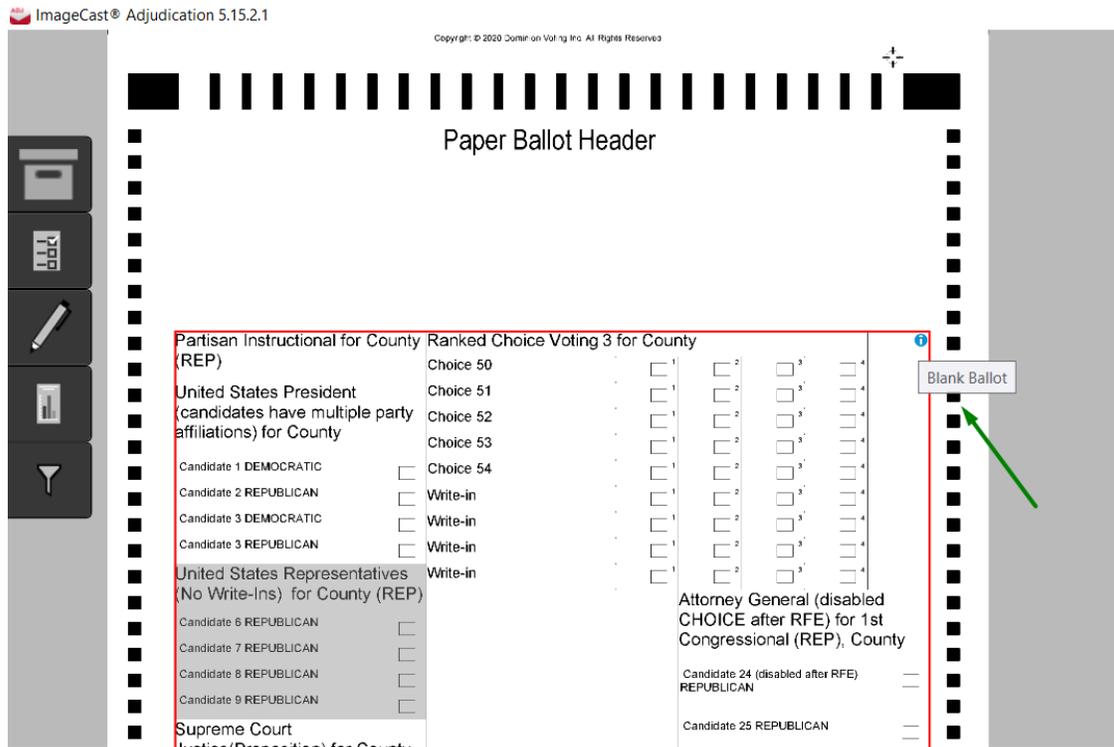


Figure 4-6: Blank ballot red overlay

4.2.7 Overlaid Adjudication Information

To aid in adjudication, the ballot image is overlaid with information about whether or not votes were 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 as follows, see Figure 4-7:

- Green: Marks counted by the system.

- Yellow: Marginal marks, that is, marks not counted by the system.

For counted marks, the system overlays a green target indicator with a checkmark 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.

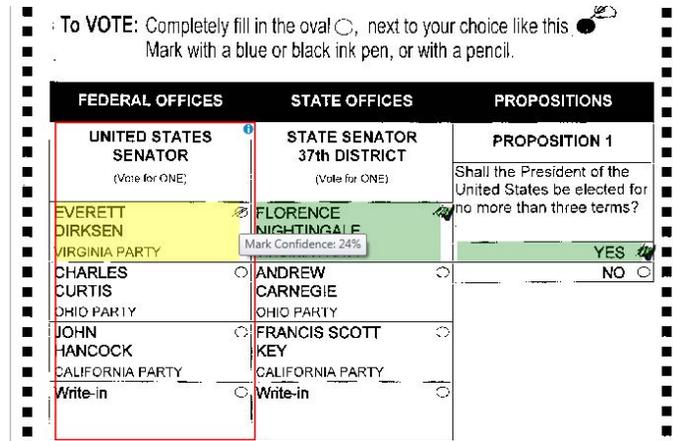


Figure 4-7: Marginal mark confidence

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, choices 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, see Figure 4-8.

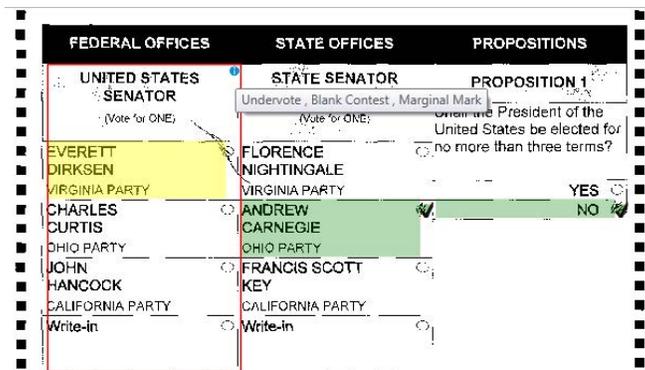


Figure 4-8: Overlays with contest information

NOTE: The Write-in overlay will appear to have a green target indicator even though one does not exist on the ballot.

4.2.8 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, see Figure 4-9. 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 checkmark icon will appear, see Figure 4-10. If the choice is disabled, clicking on the target will display an error message.

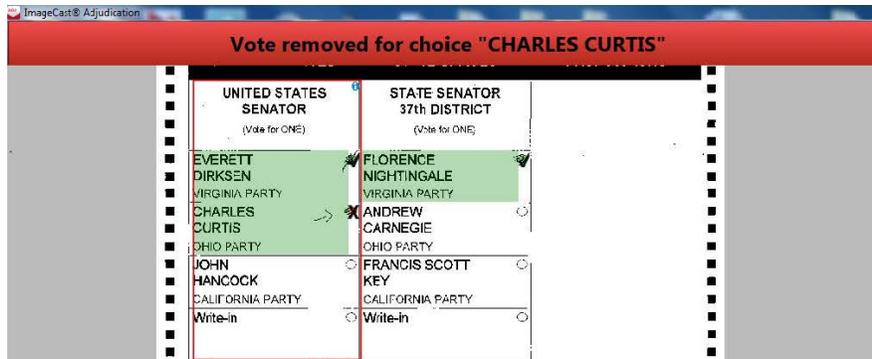


Figure 4-9: Vote removed



Figure 4-10: Vote Added

4.2.9 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.

When a write-in Candidate is selected the overlay will appear green with a checkmark over the target area, see Figure 4-11.

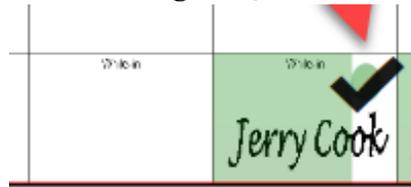


Figure 4-11: Write-in Target Area overlay

To access the pop-up dialog click the Target Area on the write-in box, see Figure 4-12 and Figure 4-13. You will be able to locate the target area when the cursor changes from a hand to a link pointer.

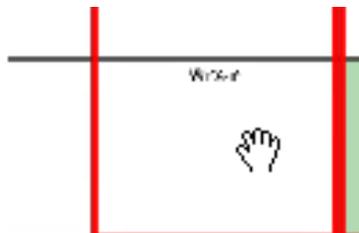


Figure 4-12: cursor off target area

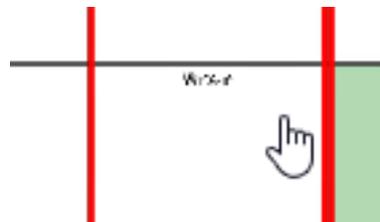


Figure 4-13: cursor on target area

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 *Democracy Suite EMS Election Event Designer User Guide* for information on how to add qualified write-ins for a contest.

Qualified write-in names may only be used once per contest, see Figure 4-14. 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.

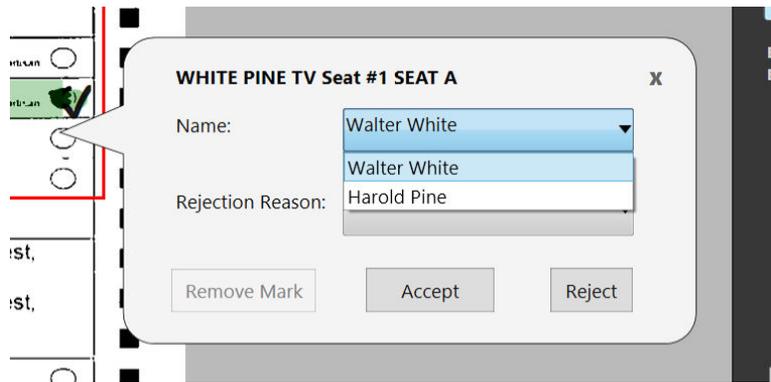


Figure 4-14: Write-in pop-up dialog

4.2.9.1 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, see Figure 4-15.

Write-in Accepted For: Abraham Lincoln

Figure 4-15: Write-in notification

4.2.9.2 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.

4.2.9.3 Removing a Write-in Mark

1. Select the write-in target to open the pop-up, see Figure 4-16.

2. Click Remove Mark.

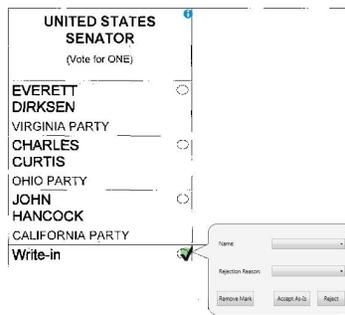


Figure 4-16: Remove a mark

4.2.9.4 Rejecting a Write-in

1. Select the write-in target in the top right to open the pop-up.
2. In the Rejection Reason field, select a predefined reason from the drop-down, type a custom reason in the box.
3. Click Reject. If you entered a custom reason, a confirmation dialog will be shown. If adding the new reason is confirmed, or if no confirmation was needed, a notification appears stating the write-in was rejected.

NOTE: Rejecting a write-in means counting it as an undervote. Accept the write-in as-is if you do not wish to count the contest as an undervote. Additionally, note that custom rejection reasons added through this pop-up will be shown in the AuditMark and reports, and cannot be changed afterwards. Because of this, you should double-check your entry and confirm with other adjudicators before adding new reasons, to avoid adding incorrect or unnecessary entries, such as reasons with spelling mistakes, or duplicates with different wording, see Figure 4-17.

If another adjudicator has added a reason you need but it's not shown in the list, close and reopen the pop-up to refresh the list.

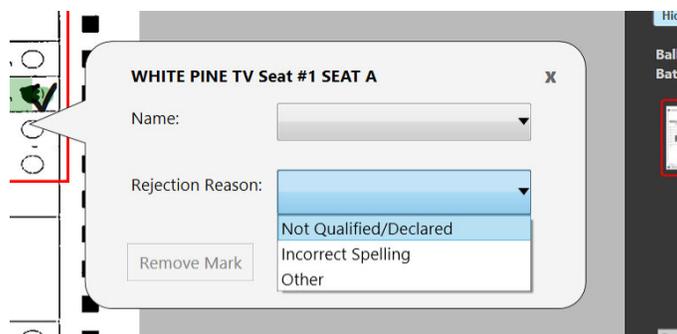


Figure 4-17: Write-in rejection list

4.2.9.5 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.

4.2.10 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, see Figure 4-18. Other contests will not have this highlighting regardless of whether they have outstack conditions or not.

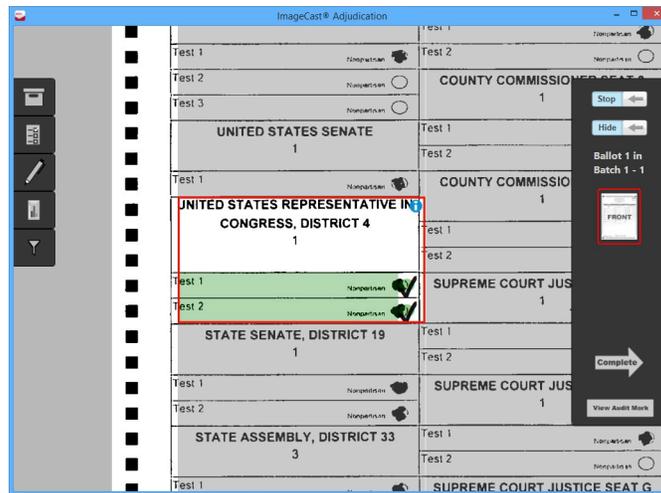


Figure 4-18: Adjudicating With Contest Filtering

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, see Figure 4-19.

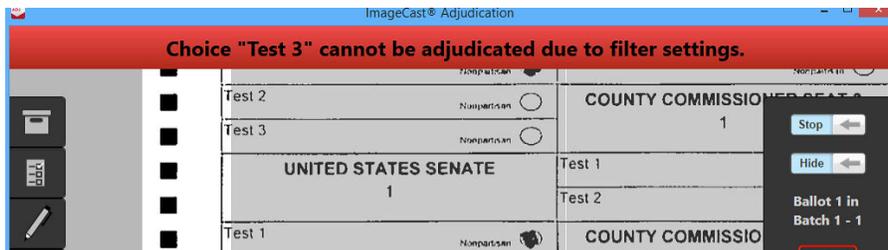


Figure 4-19: Non-adjudicable Contest Notification

4.2.11 Completing Adjudication

The **Complete** button allows adjudicators to save their adjudications and move to the next ballot, see Figure 4-20.

If there are any contests with outstack conditions that have not been adjudicated, the confirmation dialog will indicate the number of unadjudicated contests in that ballot, and will list those contests in the details section.

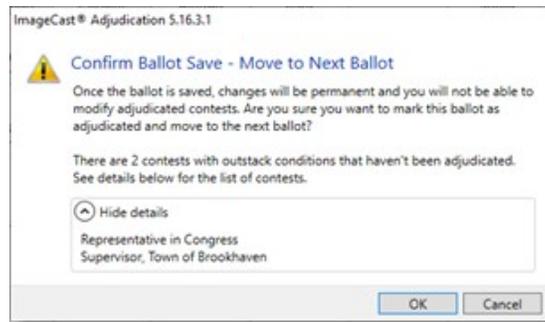


Figure 4-20: Confirm Ballot Save dialog

Adjudication administrators can go back to a ballot and view the appended AuditMark, or make changes to it (that is, readjudicate it). This is done by reopening a ballot, see section 3.2.1.3 Handling Quarantined Ballots.

However, note that 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, see Figure 4-21.

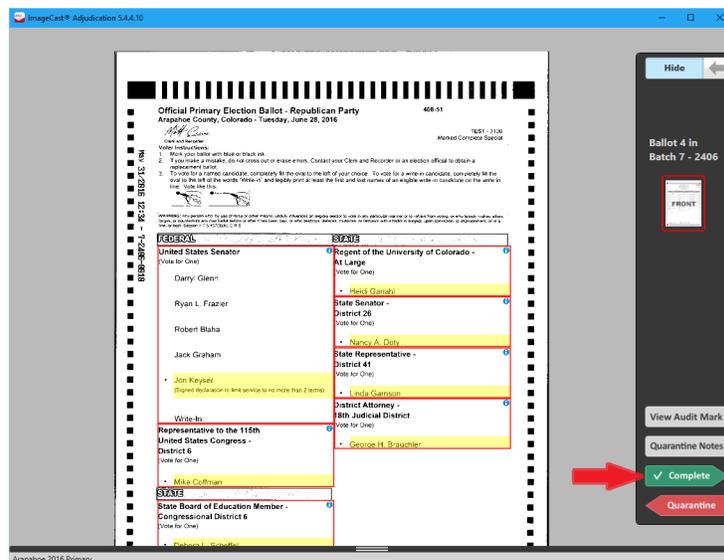


Figure 4-21: Complete Ballot Adjudication Button

4.2.12 Quarantining a Ballot

During the adjudication process, an adjudicator might need to skip adjudicating a ballot, and instead set it aside for an administrator to review. This is called quarantining a ballot. An adjudicator would do this by clicking **Quarantine** in the **Ballot Navigation** menu, see Figure 4-22.

When a ballot is quarantined, it is marked in such a way that it won't be served to adjudicators until it is removed from quarantine (unquarantined) by an Adjudication Administrator. After quarantining a ballot, adjudicators can keep adjudicating other ballots, even from the same batch as the quarantined ballot.

However, do note that the batch to which the quarantined ballot belongs will remain in progress, and won't be able to be submitted to tally, until the ballot is reviewed and adjudicated.

Administrators can see which ballots have been quarantined by going to the **Batch Management** screen. Quarantined ballots will be listed under their batch in the **In-progress** pane, and they can be reopened for review in the same way it's done for adjudicated ballots. See sections 3.2.1.2 *Re-opening Ballots* through 3.2.1.3 *Handling Quarantined Ballots*.

Once the ballot is reopened, the administrator can review the ballot and the quarantine notes added by the adjudicator, and then unquarantine or adjudicate the ballot so the batch can be completed.

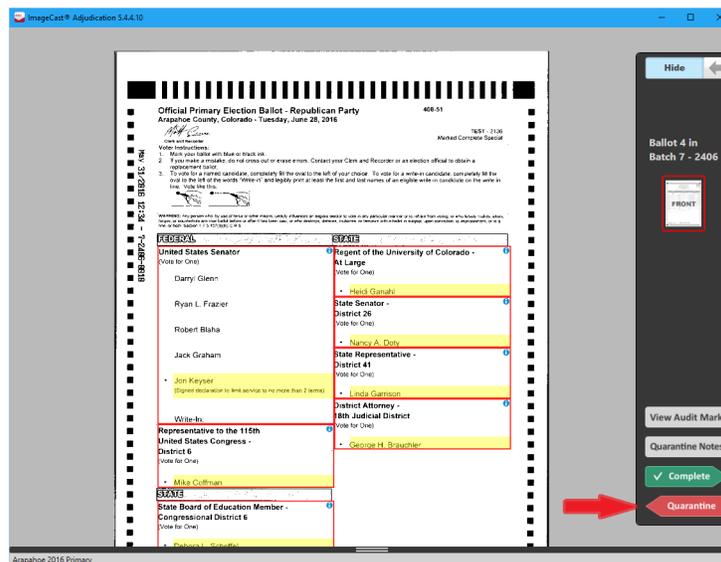


Figure 4-22: Ballot Quarantine Button

To quarantine a ballot:

1. Press **Quarantine**.

2. On the confirmation dialog, enter a note explaining why the ballot is being quarantined. This helps the administrator that will review the ballot to locate problems and decide how to handle them.
3. Press **OK**. The ballot will be taken away so you can adjudicate other ballots.

4.2.12.1 Viewing Quarantine Notes

If an administrator decides to unquarantine a ballot, the ballot will become available for adjudication and will be served to an adjudicator at some point later.

When the ballot is received again, the adjudicator may want to review the administrator's notes, or the original note added when the ballot was quarantined, see Figure 4-23. This can be done by clicking **Quarantine Notes** in the **Ballot Navigation** menu.

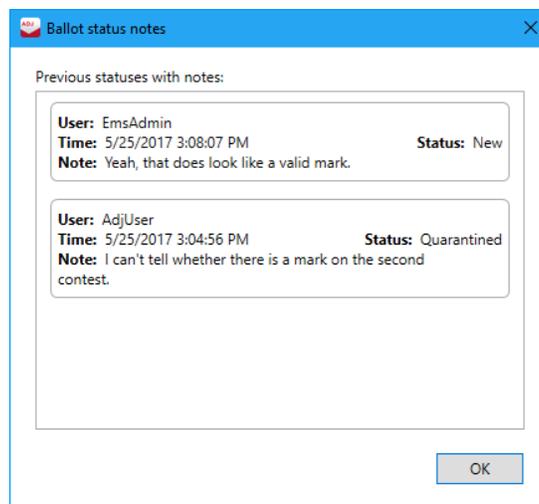


Figure 4-23: Quarantine Notes Dialog

4.3 Ballot Adjudication 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.

4.3.1 Starting or Stopping Receipt of Ballots

To allow administrators to receive ballots, or to stop receiving ballots at any point, the Ballot Navigation menu contains an extra toggle switch at the top. Initially, this is the only button available on the menu.

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 3.2.1.2 *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 start or stop receiving ballots:

1. In the **Ballot Navigation** menu, click or slide the **Start** button to begin receiving ballots.
2. Click or slide the button again, which will now be labeled **Stop**, to stop receiving ballots, see Figure 4-24.

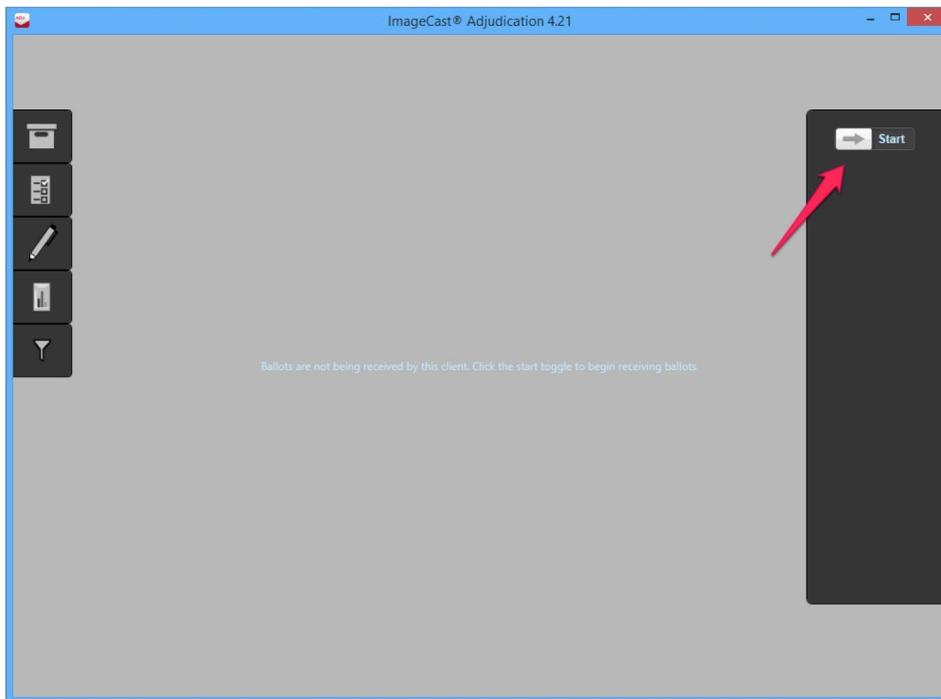


Figure 4-24: Start/Stop receiving ballots toggle button

4.3.2 Adjudicating Ballots

After receiving a ballot, adjudication proceeds in the same way as for a general user. Except for the extra toggle switch at the top of the Ballot Navigation menu, and the **Administration** pane to the left, the adjudication screen looks the same as for general users, see Figure 4-25.

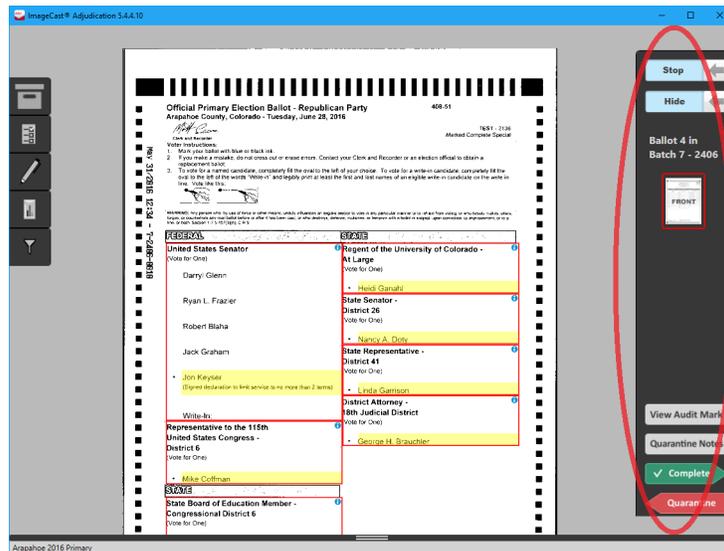


Figure 4-25: Ballot Navigation for Administrators

CHAPTER 5: ADJUDICATION PROCESS - QR AND VVPAT BMD BALLOTS

ImageCast® Adjudication includes the ability to process QR ballots such as those produced by the ImageCast® 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 VVPAT (Voter Verifiable Paper Audit Trail) BMD 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.

QR and VVPAT BMD ballots are contrasted to standard ballots, which are scans of the physical paper ballot on which voters mark their choices. With QR and VVPAT BMD 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 QR and VVPAT BMD ballots, all other adjudication functionality is identical to that described in Chapter *4 Adjudication Process*.

5.1 ImageCast[®] QR and VVPAT BMD Ballot Adjudication Overview

As with a standard ballot, to adjudicate a QR or VVPAT BMD ballot, the user is presented with a ballot image, which may be the scan of a barcode ballot or an image derived from the vote record cast on a VVPAT BMD. The user can move and zoom around the image as with a standard ballot, and use keyboard shortcuts, though some may not be applicable or have been re-purposed. Table 5-1 shows the shortcuts that are specific to QR and VVPAT BMD ballots:

Shortcut key	Action
P	Shows the previous page in the ballot.
N	Shows the next page in the ballot.
R	Returns to the ballot page, e.g., when looking at the AuditMark.

Table 5-1: QR and VVPAT BMD ballot shortcuts

The main difference in the ballot viewing area for QR and VVPAT BMD ballots, when compared to standard ballots, is the presence of the **Write-in Resolution** pane on the left side of the screen, see Figure 5-1. The pane 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, QR and VVPAT BMD 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** pane is the only way to adjudicate QR and VVPAT BMD ballots.

Finally, since VVPAT BMD ballots may contain more than two pages, the Front/Back thumbnails on the Ballot Navigation menu are replaced by Previous/Next thumbnails. As their name suggests, the thumbnails allow moving forward or backwards through the pages in a ballot, though for ballots with only two pages they still work the same way as the Front/Back buttons. In addition, a page indicator appears in between the thumbnails, which shows the total number of

pages and the page number for the page currently displayed. This indicator also doubles as a button, which can be used to return to the ballot page after looking at the AuditMark.

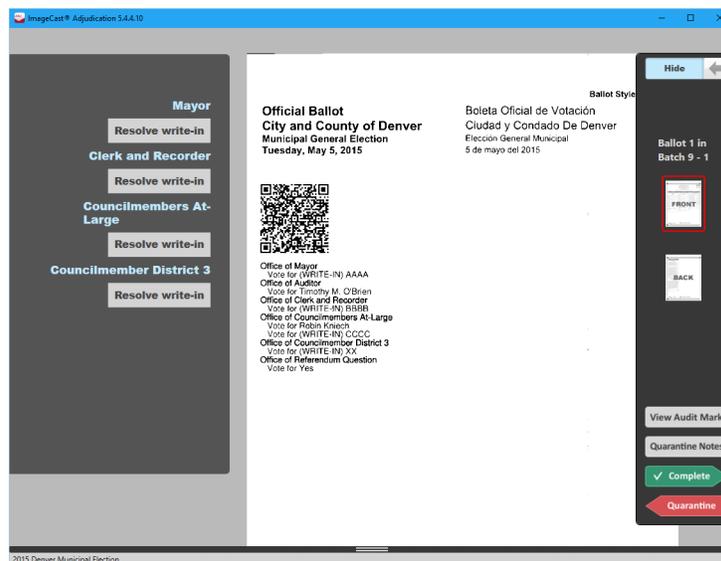


Figure 5-1: QR Ballot Adjudication

5.1.1 Turning the Ballot Overlay On/Off

In the case of QR and VVPAT BMD ballots, the ballot overlay switch on the Ballot Navigation menu is used to show or hide the **Write-in Resolution** pane. 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. In the **Ballot Navigation** menu, click **Hide** to remove the **Write-in Resolution** pane.
2. To view the **Write-in Resolution** pane again, click **Show**.

5.2 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 **4.2.9 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 QR and VVPAT BMD 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 (i.e., 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.

5.2.1 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 (first button for the first choice, second button for the second choice, etc.), see Figure 5-2. 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.

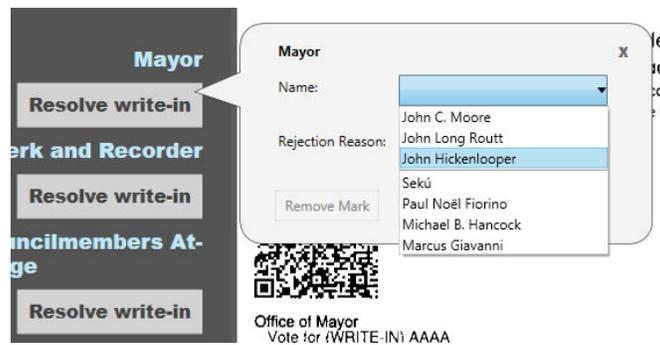


Figure 5-2: Resolving a Write-in on a QR ballot

5.2.2 Accepting a Write-in As-is

NOTE: On QR and VVPAT BMD 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.

5.2.3 Rejecting a 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. Select a rejection reason from the provided list, see Figure 5-3.
4. Click **Reject**. A red user notification appears displaying that the write-in was rejected.

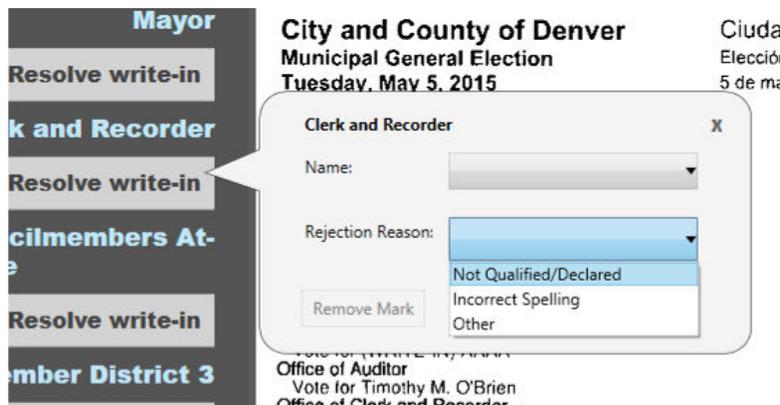


Figure 5-3: Rejecting a Write-in on a QR or VVPAT BMD ballot

CHAPTER 6: TROUBLESHOOTING

This chapter explains how to deal with certain issues that might appear when using Adjudication, and the steps to resolve these issues.

6.1 Batches showing as “Pending Adjudication”

If a batch is showing as *Pending Adjudication* but is not being displayed in Adjudication, please perform the following steps to resolve this.

For non-clustered environments:

1. Stop loading results, close RTR and stop Adjudication.
2. Run the following script on the EMS database, this will take those batches that are currently stuck in *Pending Adjudication* and will make them visible for requests from Adjudication:

```
update resultContainer set cvrSortOrder = cvrSortOrder+ 10000
where phaseId = 0
```
3. Perform an IISReset after running the script.
This will afterwards load the batches and retrieve the correct CVR sort order.
4. Start adjudication again and start RTR.
The stuck batches should now appear in Adjudication.

For clustered environments:

1. Open “Failover Cluster Manager” on any of the two EMS servers (or nodes):
Start > Windows Administrative Tools > Failover Cluster Manager.
2. On the left pane expand the cluster name.
3. Click **Roles**.
4. In the center pane, right-click the **EMSADJ** role and then **Stop Role**.
5. Wait for the services to shut down.
6. Stop loading results, close RTR.
7. Run the following script on the EMS database:

```
update resultContainer set cvrSortOrder = cvrSortOrder+ 10000
where phaseId = 0
```
8. Perform an IISReset after running the script – to be sure, do this on both EMS servers (nodes):
 - a. Press the **Windows key + S** to and in the search box type in **IIS**.

- b. Click on **Internet Information Services**.
 - c. On the left pane, click the name of the server.
 - d. Right-click and then select **Stop**.
 - e. Right-click again and select **Start**.
 - f. Repeat the same steps on the second EMS server.
9. Back in **Cluster Manager**, right-click the **EMSADJ** role and click **Start Role**.

6.2 Batches with negative value contests

It may happen that when the ballot contests were created as regular contests and styled to render 'blank' on the ballot that an error occurs later when Adjudicating them. These contest are needed for creating appropriate ballot types.

The Ballot Preparation Service will log the error: *An error occurred handling a request: Width and Height must be non-negative.*

To resolve this issue:

1. Update the following SQL database with the following:
Update contestManifestation set width = 0 where width <0
Update contestManifestation set height = 0 where height <0
2. Restart the Ballot Preparation Service.

6.3 Batches not loading in Adjudication client machines

An issue might occur when loading batches in Adjudication.

After a user completes a ballot, the client machine displays the *Waiting for ballot* screen, cursor spinning, and with significant CPU usage in Task Manager (~36%). After a while the *Not responding* message is displayed in the window title.

To resolve this:

Method 1:

1. Simply wait - do not close the hanging clients. They will eventually recover and receive ballots. If you close the clients, the process starts all over again.
2. If possible, restart the DVS Statistics Service. Do not restart the entire server, any other Adjudication services, or any non-administrator clients.

NOTE: If you are on a clustered EMS environment, see instructions below for how to restart the service.

Method 2:

1. Close all Adjudication clients.
2. Purge private queues on all client machines:
 - a. Navigate to **Computer Management > Message Queuing > Private Queues** > Right-click any queues present and select **Delete**.
 - b. If there were many messages in the queues above, also expand: **System Queues** > Right-click **Transactional dead-letter messages** > **All Tasks** > **Purge**.
3. On the server, shut down the **DVS Statistics Service**.

NOTE: If you are on a clustered EMS environment, see instructions below for how to stop the service.

4. Bring up clients again, except for admin clients.
5. Once all non-admin clients are up, go back to the server and clear the Statistics service's queue:
 - a. **Computer Management > Message Queuing > Private Queues** > Right-click the **statisticsserver** queue and select **Delete**.
 - b. Repeat for the **statisticsserver_pendingupdates** queue.
6. Start the Statistics service.
7. Start any administrator clients.
8. After this, avoid restarting clients, or they will experience the issue until you

follow method 1 or 2 again.

For clustered EMS environments, To start, stop, or restart the Statistics service:

1. Open “Failover Cluster Manager” on any of the two EMS servers (or, nodes). Search for it using **Windows Search** or go to **Start > Windows Administrative tools > Failover Cluster Manager**.
2. On the left pane expand the cluster name.
3. Click **Roles**.
4. In the center pane, click the **EMSADJ** role.
5. At the bottom of the center pane, click on the **Resources** tab. A list of Adjudication services displays.
6. To stop the service, right-click on the **DVS Statistics Service**, then click **Take Offline**. Wait for the service to shut down.
7. To start the service, right-click **DVS Statistics Service** and click **Bring Online**.

6.4 Ballot cards with blank front side

An issue occurs where the ballots are being presented in Adjudication with an overlay on a blank side of the ballot.

To resolve this, please follow the steps below:

1. Open EED.
2. Navigate to: Tabulator Options > Always save both sides of ballot image.
3. Set value to 1.
4. Save and close the changes in EED.
5. Back in Adjudication, regenerate the election files for ICC.
6. Re-deploy ICC election files to respective ICC workstation.

NOTE: To resolve this issue, there is no need to restore the project package to RTR/ADJ Server. It is recommended that the newly created ICC election files be copied over to RTR Server manually. When performing a project package back up Pre/Post elections, the latest elections files will be available in the backup.

REVISION HISTORY

Rev.	Date	Summary
3	04-18-2023	<ul style="list-style-type: none">• Updated based on 5.17-CO feedback
2	04-05-2023	<ul style="list-style-type: none">• Revised with grammar and content corrections
1	03-28-2023	<ul style="list-style-type: none">• Branched for 5.17-CO

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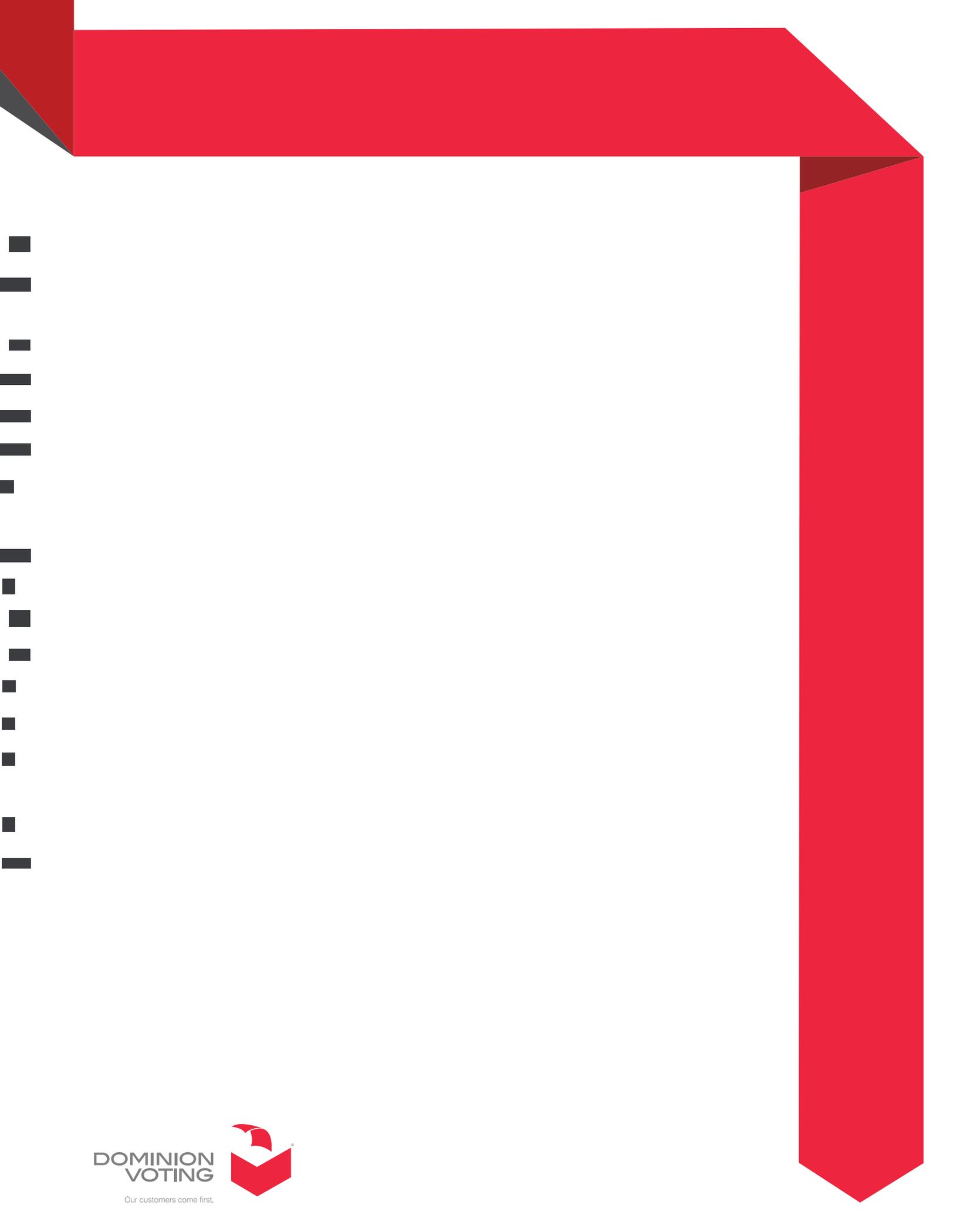
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